Syria
Archéologie, art et histoire

92 | 2015
Dossier : Bains de Jordanie, actualité des études thermales

Ancient architecture in the village of Umm al-Surab, Northern Jordan

Piero Gilento

Electronic version
URL: http://journals.openedition.org/syria/3139
DOI: 10.4000/syria.3139
ISSN: 2076-8435

Publisher
IFPO - Institut français du Proche-Orient

Printed version
Date of publication: 1 June 2015
Number of pages: 329-360
ISBN: 9782351597149
ISSN: 0039-7946

Electronic reference
Piero Gilento, « Ancient architecture in the village of Umm al-Surab, Northern Jordan », *Syria* [Online], 92 | 2015, Online since 01 June 2017, connection on 19 April 2019. URL : http://journals.openedition.org/syria/3139 ; DOI : 10.4000/syria.3139

ANCIENT ARCHITECTURE IN THE VILLAGE OF UMM AL-SURAB, NORTHERN JORDAN

Construction process and building techniques, a case study

Piero Gilento
Building Archaeology in Jordan Project, University of Siena

Résumé – Cette contribution présente les premiers résultats de l'analyse stratigraphique des structures encore en place d'un bâtiment dans le village d'Umm al-Surab (nord de la Jordanie). Ce complexe architectural a été étudié afin de clarifier les relations entre les corps de bâtiment qui le composent et identifier les activités de construction qui l'ont affecté au cours du temps. Malgré les démolitions et les rénovations du bâtiment, nous avons identifié une séquence de sept phases de construction, sur trois grandes périodes, au travers de l'analyse de la structure matérielle. Ce type de recherche autour de l'archéologie du bâti a permis d'établir une chronologique relative avec la caractérisation des principales techniques de construction, éléments utiles pour une première comparaison typologique et chronologique. Ces résultats, bien que partiels, permettent d'améliorer nos connaissances sur l'environnement technologique et constructif du Proche-Orient, en particulier dans la région du Ḥawrān.

Mots-clés – Village, analyse stratigraphique, travail de la pierre, époque romaine, époque byzantine, Ḥawrān Sud, Umm al-Jimal, Samā, Mafraq, *Via Traiana Nova*, *Provincia Arabia*, *Limes Arabicus*

Abstract – This paper provides the initial results of a stratigraphic analysis performed on the standing remains of an architectural complex in Umm al-Surab (northern Jordan). The building was investigated with two objectives: clarifying the relationships between individual building elements and identifying the construction activities that have affected it over the time. In spite of demolitions and renovations, we have identified a sequence of seven construction phases, grouped in three main periods, via the analysis of the material structure. This type of investigation, i.e. Building Archaeology, has provided at the moment a relative chronological sequence along with a characterization of the main building techniques, useful tools for an initial typological and chronological comparison. These results, albeit partial, fit within a broader history of studies and serve to increase our knowledge of the technological and architectural environment of the Near East, and in particular of the Ḥawrān region.

Keywords – Village, stratigraphic analysis, stone-working, Roman period, Byzantine period, Southern Ḥawrān, Umm al-Jimal, Samā, Mafraq, *Via Traiana Nova*, *Provincia Arabia*, *Limes Arabicus*

ملخّص – تعرض هذه المقالة النتائج الأولى لتحليل إستراتغرافي لآثار مبنى لا يزال في مكانه في قرية أم السراب شمال الأردن. وقد تم دراسة هذا المجمع المعماري مع هدف رئيسي وهو توضيح العلاقة بين المباني الرئيسية التي تشكل المبنى وتحديد الأنشطة التي أقيمت داخله على مر الزمن. وعلى الرغم من هدم وتجديد المبنى، حددنا سبع مراحل بناء، وثلاث فترات كبرى، من خلال تحليل هيكلية المبنى. أدى هذا النوع من الأبحاث حول الآثار المبني إلى تحديد تسلسل زمني نسبي وتقنيات البناء الرئيسية المفيدة لمقارنة طوبوغرافية وزمنية أولية. بالرغم من كون هذه النتائج جزئية، فهي تساعد على تحسين معرفتنا للمحيط التكنولوجي والتشييدي في الشرق الأوسط، ولا سيما في منطقة حوران.

كلمات محورية – قرية، تحليل إستراتغرافي، نقش الحجر، الحقبة الرومانية، الحقبة البيزنطية، جنوب حوران، أم الجمال، سماء، مفرق، *Via Traiana Nova*، المقاطعة الرومانية العربية، *Limes Arabicus*

The "Building Archaeology in Jordan Project" was developed by the University of Siena together with the Department of Antiquities of Jordan, and with the collaboration of the Italian Ministry of Cultural Heritage. The stratigraphic readings of TU 24 was the subject, together with the study of the TU 28 and other buildings in the area, of the Ph.D. dissertation by the author (2013), partially funded by the Daniela Fusaro Fellowship (2009). I would like to thank in particular Roberto Parenti, the scientific director of the "Building Archaeology in Jordan Project" and Stefano Anastasio. I want to express my gratitude to J.-M. Dentzer, P.-M. Blanc, F. Villeneuve, F. Braemer, J. Dentzer-Feydy and Sh. Sbib for the possibility to participate to the Table-ronde doctorale organized by the French Archaeological Mission in the southern Ḥawrān, held in Nanterre (16th December 2013), of which this article is the result. Thanks also to the referees, whose comments have been very useful in improving the text. I would also to thank Hélène Dessales, my tutor during the three-months fellowship at the ENS in Paris in 2012.

Introduction

The study of Umm al-Surab is part of a broader research project on construction techniques and building typologies in the Jordanian Ḥawrān sponsored by the Building Archaeology Laboratory of the University of Siena [1]. In addition to a survey of the main architectural complex of the Church of Saints Sergius and Bacchus [2], a systematic study of a structure in the eastern part of the village was performed, the first historical and architectural results of which we present here.

The methodological approach involved stratigraphic analysis applied to the study of the standing architectural remains, i.e. Building Archaeology. This discipline is well-established in Europe, where it has achieved excellent results in the critical analysis of architectural contexts, and it has also achieved a prominent position in the protection and restoration of built heritage [3]. In this regard, new digital recording systems play a crucial role in collecting data. In fact, the present project included testing of a photogrammetric survey technology which allowed us to generate textured three-dimensional RGB point-cloud models with high photographic resolution [4]. These digital products are very useful for recording observations and suggesting hypothetical reconstructions, and they can also be used in future conservation and restoration projects.

Umm al-Surab: Geographical context and a brief History of Research

The southern Ḥawrān is a geographical area characterized by the development of rural settlements that reached their apogee between the 5th and 6th cent. AD [5] but with a structured social and cultural

1. The Building Archaeology in Jordan Project is focused on the study of the Roman-Byzantine and Islamic architecture in Jordan. This multidisciplinary project, directed by Professor Roberto Parenti of the University of Siena, is funded by the University of Siena and the Italian Ministry of Foreign Affairs and in collaboration with the Department of Antiquities of Jordan (DoA), represented by Abdel Qader al-Housan, Jamile al-Qutaish, and Tawfiq Hunaiti. In three seasons (2009, 2011, 2012) we focused our research efforts on Umm al-Surab and the northern area of Jordan (Mafraq Governorate), studying building techniques and materials with archaeological and archaeometric tools (mortar analysis) and developing a new approach to the building survey of complex sites with photogrammetric tools to obtain high-definition 3D models of buildings and surfaces.
2. For a specific study of the Church of Saints Sergius and Bacchus see Gilento 2014e.
3. Archaeological research applied to standing remains was developed in the late 1970s in Italy thanks to the initial studies by Tiziano Mannoni and later methodologically codified, especially by R. Parenti and G. P. Brogiolo in the early 1980s. The method has different names and methodological applications throughout Europe: *Building Archaeology* in the UK, *Bauforschung* in Germany, *Arqueología de la Arquitectura* in Spain. The so-called *Archéologie du bâti* was initiated in France with the studies of Christian Sapin (CNRS, Lyon) in the late 1970s and subsequently developed by C. Arlaud, J. Burnouf, and N. Reveyron, focusing on Medieval archaeology in particular.
4. For a specific discussion on this topic see Gilento, Parenti & Vecchi 2013; Parenti, Gilento, Ceccaroni 2011.
5. De Vries 1998, p. 234; Villeneuve 1985, p. 126-129; King 1983a, p. 79-84.

background dating back to pre-provincial times [6]. The relative fertility of the area and the favorable geographical location linking the Mediterranean Sea to the southern Arabian peninsula through the Wadi as-Sirhan produced a socially and economically well-developed territory; this positive trend seems to have prevailed until the early Abbasid period [7]. The only widely-available building material in the southern Ḥawrān is basalt. This material, along with the near-total absence of wood for construction, generated an absolutely unique local situation in terms of building techniques. Historical and social events, together with the use of this extremely durable building material, created the conditions for good preservation of the ancient habitat in the region, at least until the end of the 1970's [8]. From that point, the situation changed abruptly due to a strong demographic growth, linked to wider processes of urbanization in the area and intensive land-use. Currently, part of this ancient territory falls within the Mafraq Governorate of modern Jordan, about 80 miles north of the capital, Amman. More precisely, the area covered by our research is limited to the west by the village of Samā and to the south by the city of Mafraq, capital of the governorate, and the Azraq oasis with three sites —Qasr al-Uwaynid, Qasr al-Sol, and Qasr al-Usaykhim— located on the south-eastern edges of the basaltic lava flows touching the desert areas at the entrance of the Wadi as-Sirhan. Our research area is limited to the east by the site of Dayr al-Kahf, and to the north by the Syrian border (**fig. 1**).

The population is mostly composed of Bedouins who are slowly becoming sedentary and Druzes who were installed in the area at the beginning of the 18th cent., with more intense occupation of the region between the 19th and 20th cent. The presence of the Druze population has been decisive for the study of architectural remains in the Ḥawrān because, between 1898 and 1939, it permanently occupied some of the archaeological sites covered by our research. During that time the Druzes used the ancient structures as a source of building materials, thanks in particular to the durability of the basalt. At the same time they transformed or replicated ancient building techniques, consequently creating problems in their identification and interpretation [9].

Although the southern Ḥawrān was explored at the beginning of the 19th cent. [10], initial notices and reports about Umm al-Surab were produced only after the second half of the same century [11].

The first systematic study of the village was carried out by Howard Crosby Butler between 1904 and 1905 when, as the scientific director of the Princeton Expedition to Syria, he visited and recorded the entire southern Ḥawrān (**fig. 2**), including Umm al-Surab. On that occasion an architectural survey of the Church of Saints Sergius and Bacchus was performed (**fig. 3**), and it was accompanied by a precious photograph of the interior of the architectural complex [12]. Drawings were enriched by architectural and decorative details (cornices, capitals, and bases) at a scale of 1:20 [13], and during the survey various Nabataean and Greek inscriptions were identified and cataloged [14]. Butler noted that "the ruins were inhabited" until comparatively recent times but the settlers who were last to make use of the ruin, made few changes in it, contenting themselves with making a few repairs on the ancient houses" [15]. Judging

6. Dentzer 1985-1986, p. 392.
7. Bianchi 2007, p. 182.
8. Since 1974 the Southern Syrian Ḥawrān has been the object of intensive research by the French Archaeological Mission. For the main bibliography see: Dentzer 1985-1986; Bopp 2006; Clauss-Balty 2008; Al-Maqdissi, Braemer & Dentzer 2010. For Ḥawrān building technology see Bessac 2010. For the Jordanian Ḥawrān see Helms 1981; King 1983a, b; De Vries 1998, Kennedy & Freeman 1995.
9. Brown 2009, p. 377-388.
10. The German scholar Ulrich Jasper Seetzen visited the north-west and north of the region in 1805 (Seetzen 1854). He was followed by the Swiss explorer Johann Ludwig Burckhardt (1810-1812), the German scholar Otto Friedrich von Richter (1815), and the British explorers James Silk Buckingham (Buckingham 1821 and 1825) and William John Bankes, 1816-1818 (Sartre-Fauriat 2004). The latter certainly visited Umm al-Jimal in 1818 but did not pass through Umm al-Surab.
11. Graham 1858; Schumacher 1893-1895; Dussaud & Macler 1901.
12. Butler 1919: II.A.2, ill. 79.
13. Butler, 1919, II.A.2, ill. 78.
14. Butler 1919, II.A.2, p. 94-99; Littmann 1910, III.A.2, p. 57-59.
15. Butler 1919, II.A.2, p. 95.

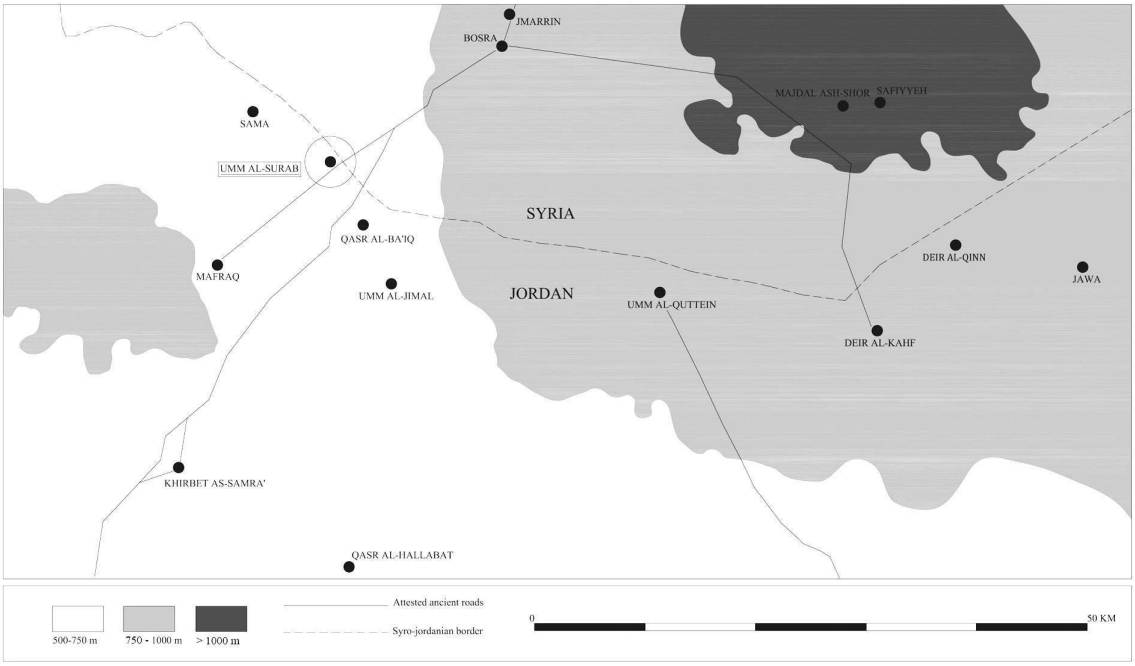

Figure 1. Southern Ḥawrān with the main archaeological sites and the ancient network of routes © P. Gilento.

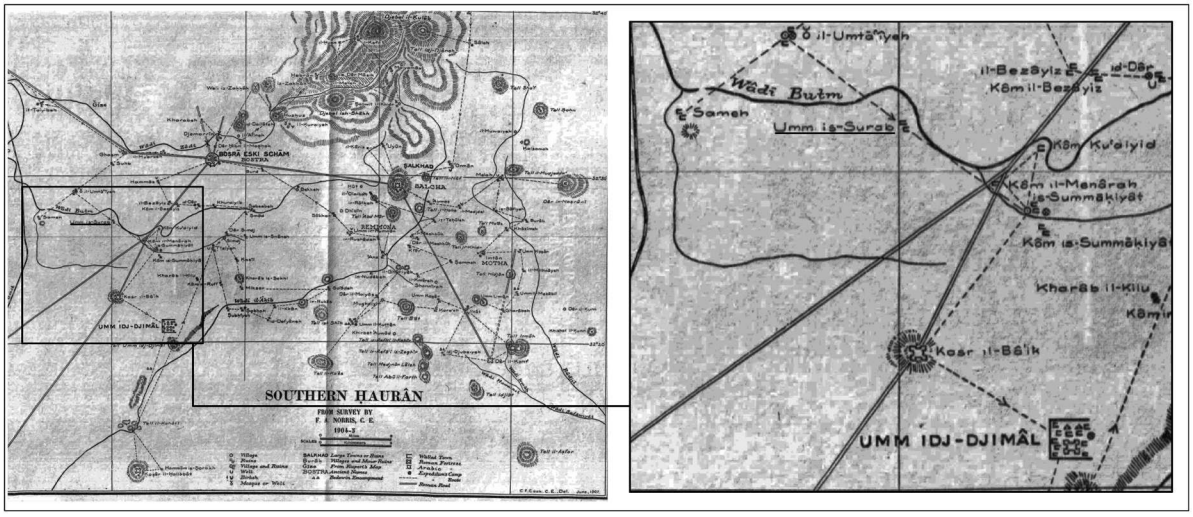

Figure 2. The complete and detailed topographical survey performed by F. A. Norris in 1904-1905 during the Princeton Expedition to Syria. In relief the research area near Umm al-Surab, after Butler 1919.

from the architectural remains and inscriptions found there, he asserted that "the site is a very ancient one", assuming the presence of a temple or other public building dating back to the Roman period due to the discovery of a large number of columns [16] and architectural fragments of the classical tradition, to which he dedicated a specific paragraph. Butler concluded the section on Umm al-Surab with a detailed architectural description of the Church of Saints Sergius and Bacchus, a description of the northern complex, and a short paragraph on the domestic architecture [17].

16. Butler records the presence at the site of an extraordinary number of columns exceeded, according to him, only by those identified in the nearby village of Umm al-Jimal (Butler 1919, II.A.2, p. 95).
17. For a specific discussion on domestic building in Umm al-Surab see the following paragraph.

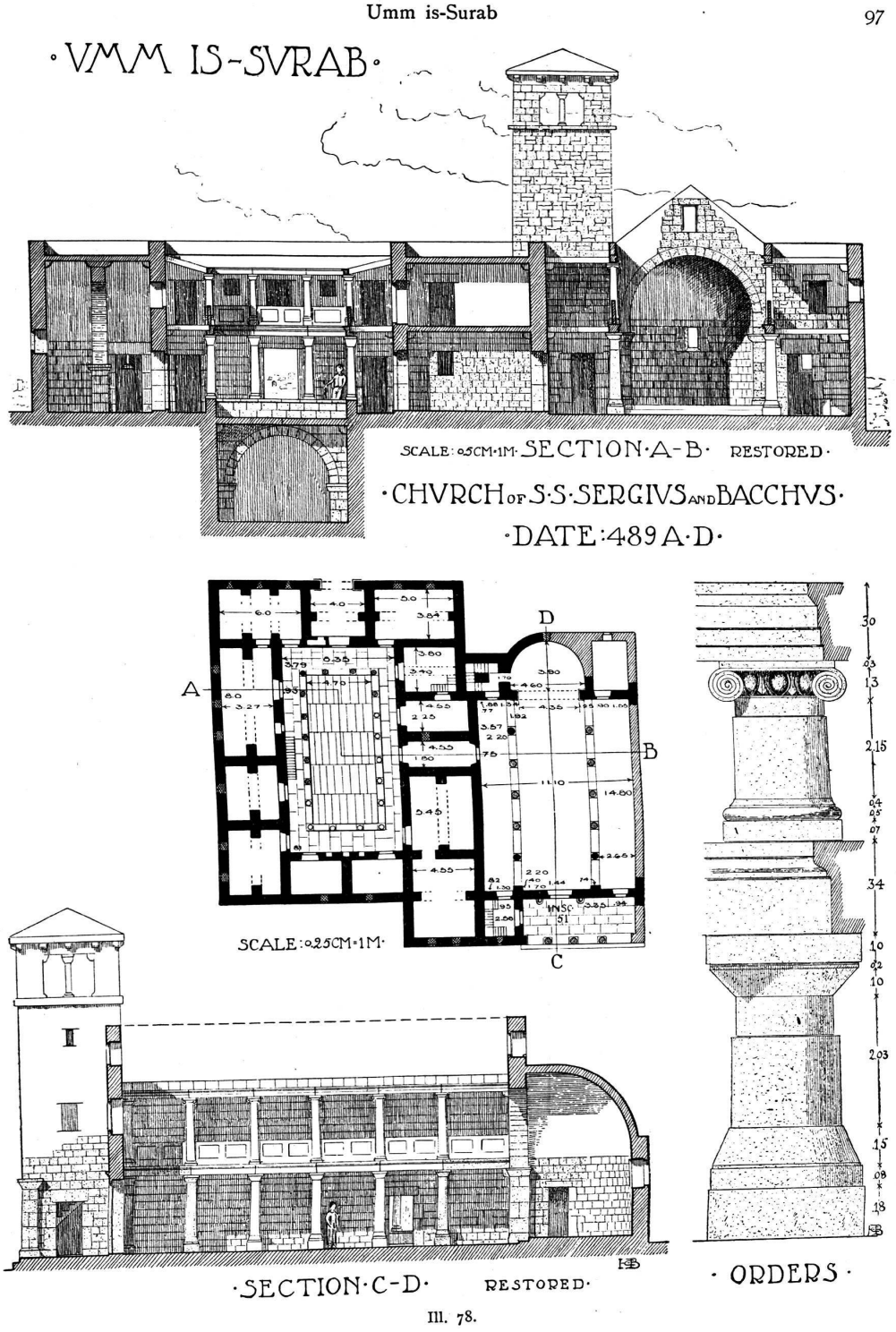

Figure 3. Graphic documentation of the Church of Saints Sergius and Bacchus at Umm al-Surab by H. C. Butler, after Butler 1919, ill. 78, p. 97.

Umm al-Surab was visited again only in the 1930s, by the Italian scholar Renato Bartoccini [18]. In the mid-1960s other scholars performed new research at the site [19], while a new interest in the village, and in particular in its ecclesiastical architecture, arose only after the early 1980s. At that time G. R. D. King carried out a complete survey of the site, along with the study of the nearby village of Samā, between July 4 and August 30, 1980; these activities were part of a broader project on the southern Ḥawrān between Byzantine and Islamic times [20]. In 2002, an Italian mission from the "La Sapienza" University of Rome performed a new archaeological and topographical survey of Umm al-Surab, focusing especially on the residential buildings of the western area [21].

The mission from the University of Siena made a preliminary visit to the site in 2008, when a limited photographic and photogrammetric survey was performed on the façade of the Church of Saints Sergius and Bacchus. During the 2009 season, with the launch of the Building Archaeology in Jordan Project, Umm al-Surab was the object of an organized scientific program including a surface survey, a topographic survey with total data station, a three-dimensional photogrammetric survey (**fig. 4-5**) of two architectural complexes (Topographic Units/TU 24 and 28) [22], and an initial analysis of the material structure, paying particular attention to the reading of the building techniques. During the following research seasons (2011-2012), the surveys were completed and the studies of the construction techniques were enlarged [23].

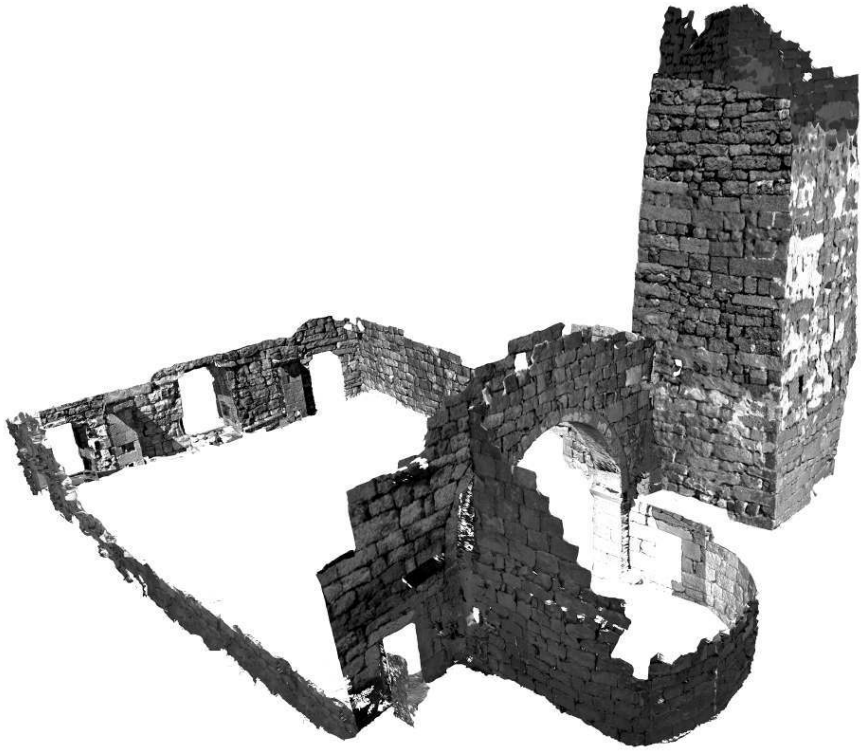

Figure 4. Umm al-Surab, TU 28: 3D model with high-resolution and photorealistic rendering of the surfaces of the Church of Saints Sergius and Bacchus
© Building Archaeology Laboratory at University of Siena.

18. Bartoccini 1941, pl. XI.
19. Mittmann 1966; Harding (unpublished and undated correspondence preserved in the Department of Antiquities, Amman, cited in Bader 2009, p. 61).
20. King 1983a et 1983b, p. 111.
21. Bucarelli 2007.
22. TU 24 corresponds to a building located in the extreme eastern sector of Umm al-Surab, while TU 28 is the complex in the central area of the site with the Church of Saints Sergius and Bacchus.
23. For the initial results of the University of Siena project, see also Parenti & Gilento 2011, 2012.

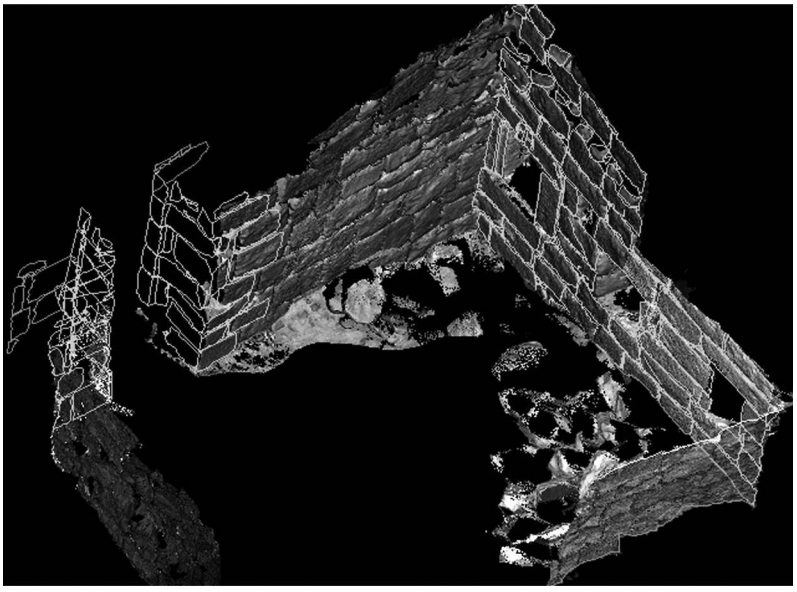

Figure 5. Umm al-Surab, TU 28, drawing process in wireframe mode on a 3D model generated by terrestrial photogrammetry © P. Gilento.

Domestic architecture in Umm al-Surab

The first description of the domestic architecture at Umm al-Surab was made by Butler, who identified three main building typologies [24]. The first typology consists of rooms built around a courtyard with dimensions very similar to those of the northern courtyard of the Church of Saints Sergius and Bacchus [25] (**fig. 6**-**7**). The second group also consisted of structures built around a courtyard, but of smaller dimensions than the first one. The third typology was composed of buildings constructed on one or two sides of a court, leaving other sides occupied by simple walls. According to Butler, the *atrium* of these houses could be surrounded by columns and could be provided with a *compluvium* and a *vestibulum* with arches of purely Hellenistic-Roman style [26].

Our survey of the village revealed, on the one hand, a built environment much more complex and articulated than the one proposed by Butler; on the other hand, we ascertained the absence of houses with columns and arched *vestibula*. These differences may have been determined by a deterioration in the condition of the buildings since Butler's visit, but we believe it more likely that the American scholar proposed a hypothetical reconstruction of those structures with *atrium* and *vestibulum*. Butler probably did observe houses with colonnaded *atria*, but in other neighboring villages such as Umm al-Jimal, the largest and most important village in the area. Currently Umm al-Surab preserves various typologies of house composed of isolated structures or clusters of structures built on three or four levels (**fig. 8**), clear evidence of the exploitation of height in tower-like constructions. In fact, the tower is a very common building typology in the region (**fig. 9**) together with the internal courtyard as the most important spatial element. In all cases these structures are the result of a complex stratification of building events that collects different construction typologies juxtaposed over the time.

The study of the standing remains of TU 24 allowed us to consider more specifically the diachronic evolution and the nature of these local building models.

24. Butler 1919, II.A.2, p. 99.
25. It is a rectangular courtyard of 127 m^2 surrounded by twelve rooms.
26. "*The house built about a court, or atrium, with colonnades about it, the use of the compluvium and the arched vestibule, are distinctly Roman, or Greco-Roman, conceptions*…" Butler 1919, II.A.2, p. 99.

Figure 6. Umm al-Surab, TU 28: general plan of TU 28 and specific plan of the courtyard III in the northern area of the complex © P. Gilento.

Figure 7. View of courtyard III from the south-east © P. Gilento.

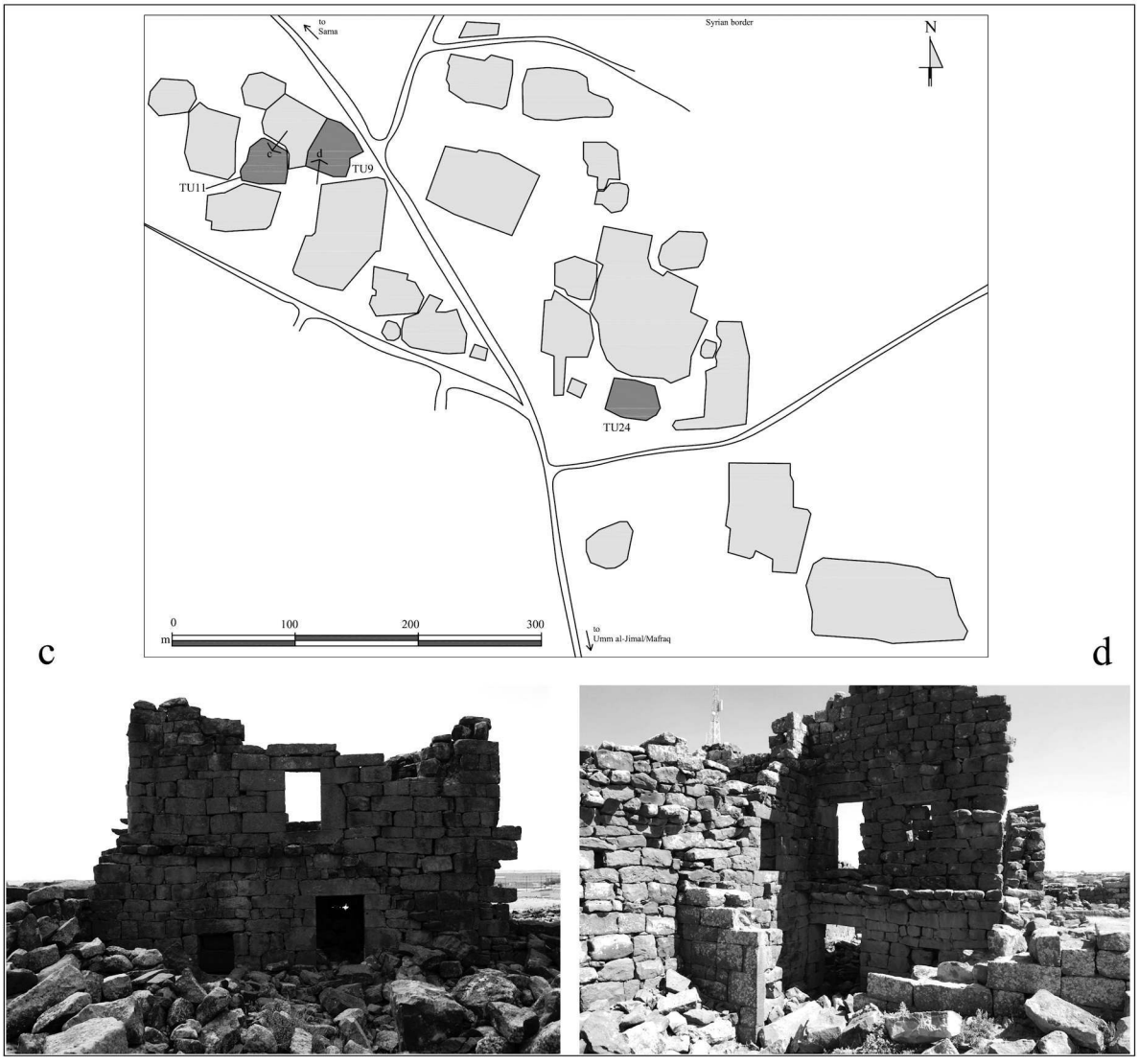

Figure 8. Two-stories single house in TU 11 (c) and three-stories block of houses in TU 9 (d)
© P. Gilento.

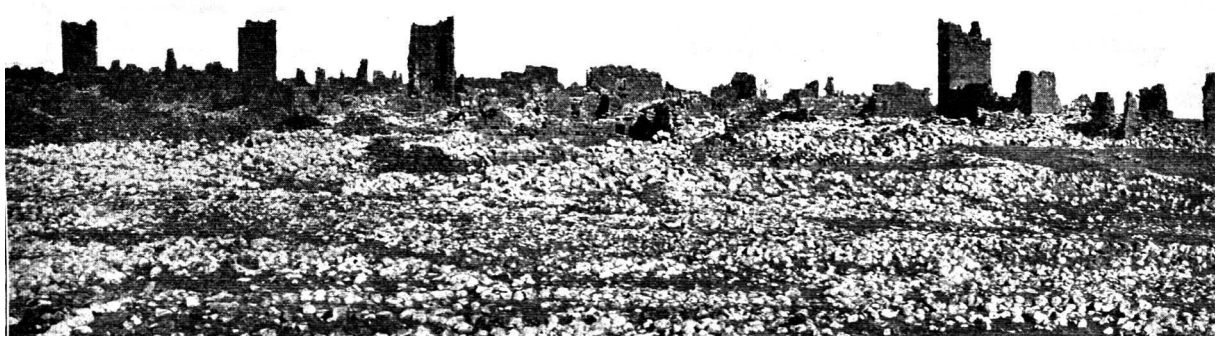

Figure 9. View from the south of the village of Umm al-Quttayn where it is possible to observe a skyline defined by several buildings tower-shaped, BUTLER 1919, ill. 116, p. 137.

TU 24: Stratigraphic analysis of the standing Structures

Field work methodology

The methodology adopted for the fieldwork started with the division of the site into topographic units (TU), which can be composed of one or more architectural complexes (AC): this is the result of the sum of several building elements (BE). A building element is the smallest functional unit that can be recognized by formal and structural features like, for example, a tower, an apse, a minaret, etc. In a BE, the smallest homogeneous building action, such as the construction of a window, the reconstruction or the demolition of a part of a wall (but also "negative" actions like the fall of a painted surface), is defined as a stratigraphic unit (SU) [27]. Practical operations in the field consisted of a systematic survey of the remaining standing structures of the walls and building elements of TU 24 and the subsequent recording of their technical-formal characteristics and relative stratigraphic analysis. Stratigraphy thus becomes an analytical methodology which, thanks to the identification of the differences between stratigraphic units, can give reliable information and help delineate the outlines of construction techniques and architectural typologies.

Description of the architectural complex and synthesis of the construction periods

During the first season of the project (2009), Umm al-Surab was divided into 29 topographic units (TU) (**fig. 10**), and these were subsequently sub-divided into one or more architectural complexes (AC). This distinction was necessary to organize and catalogue a series of structures (houses, cisterns, churches) spread over about 11 ha (**fig. 11**).

The architectural complex analyzed below corresponds to TU 24, which from the outside appears to be a compact and plain building block, with high walls articulated by small slits on the southern side, while the modest entrance is located on the western side (**fig. 12**).

The current plan of TU 24 (**fig. 13**) is roughly rectangular in shape, with southern side measuring 23.94 m, eastern side 25.40 m, northern side 15.64 m, and western side 22.30 m; the total area is 562 m^2. The inner courtyard, which is about 1.50 m lower than the level of the main entrance, measures 16.28 m in length on the southern side and 10.81 m on the eastern side, with a total area of 146 m^2 and an L-shaped plan. The courtyard is surrounded by seven building elements (BE) with seven doors and only two windows (**fig. 14**). This compact architectural block bounds the village to the south and cuts off one of the main roads of TU 29, the largest and the most densely inhabited area of the site.

The building was divided into three main Construction Periods in which were identified seven phases. Period I corresponds to an original layout of the structure completely different from the current one, in which there were small independent buildings developed in elevation. In Period II TU 24 was structured as an organic architectural complex composed of various building elements arranged around a courtyard, while in Period III most of the walls were rebuilt together with the roofing systems. Afterwards the structure was abandoned until today, when some rooms are occasionally used as stables.

Between 2009 and 2011, the Department of Antiquities of Jordan performed cleaning and excavation activities at TU 24, part of a broader project to conserve the structure. From these activities emerged several structural remains, such as a wall (stratigraphic unit/SU 29) on the south side abutting the perimeter wall (SU 24). A corner wall with an opening was found under a thick layer of earth outside the north-western area of the complex (**fig. 15q**); currently, there is no material evidence that establishes a direct relationship between TU 24 and this external structure. The excavation also revealed another wall structure (SU 52), composed of irregularly assembled ashlars with re-used elements, abutting the northern wall (SU 51) (**fig. 15n**).

27. This working methodology follows an Italian standard codified by Roberto Parenti (Parenti 1988) and Gian-Pietro Brogiolo (Brogiolo 1988). The Italian translation for each term is: *Unità Topografica* (UT), *Complesso Architettonico* (CA), *Corpo di Fabbrica* (CF) and *Unità Stratigrafica* (US).

Figure 10. Umm al-Surab divided into 29 Topographic Units (TU) during the 2009 by S. Anastasio and F. Saliola © ORION-ME, Map Data, Gisrael, Digital Globe, after Google Earth photo.

Figure 11. General plan of Umm al-Surab showing the TU 24 and TU 28 interested by the building survey and the archaeological analysis and the cisterns © P. Gilento.

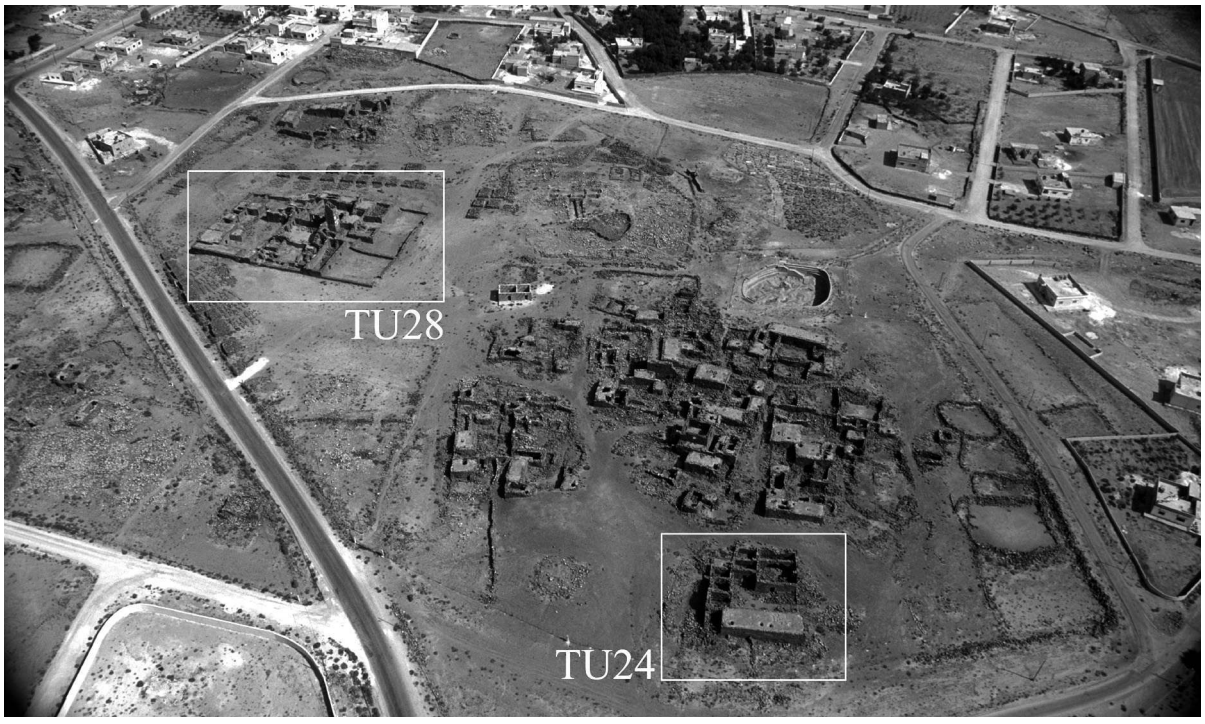

Figure 12. Umm al-Surab from the south-east with TU 24 and TU 28 in evidence.
APAAME, 20060911_RHB-0074 © R. Bewley, 11 septembre 2006.

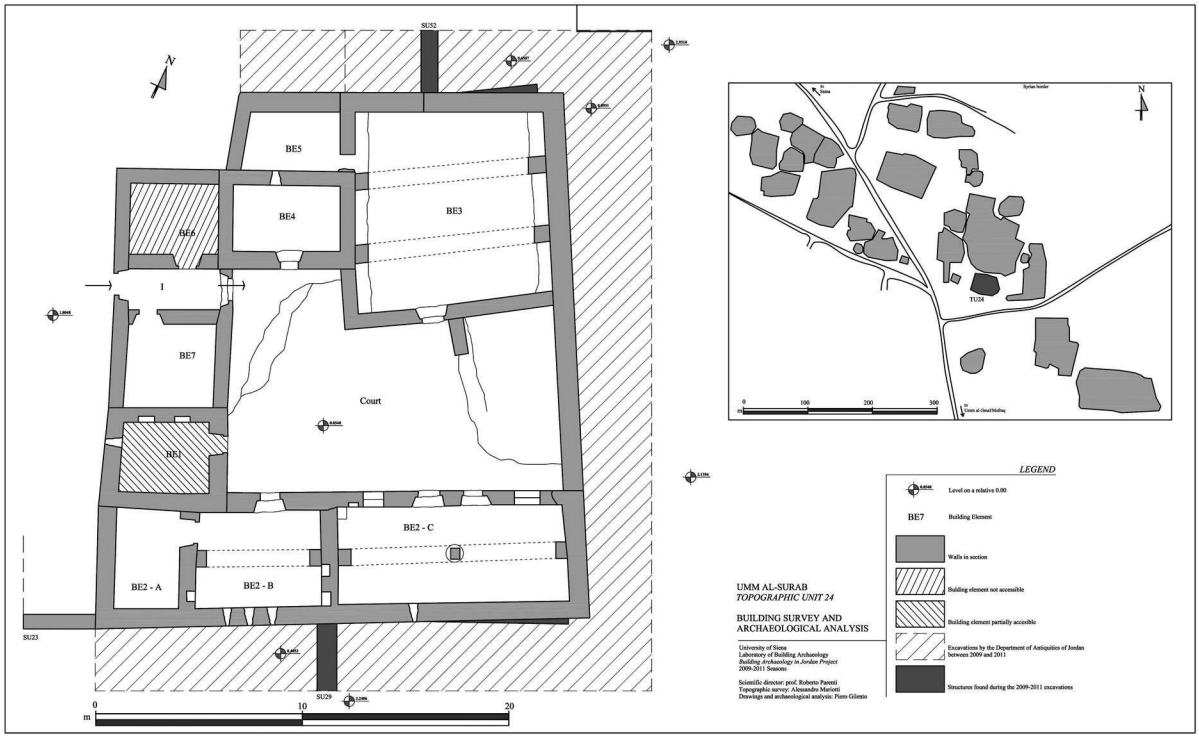

Figure 13. General plan of the TU 24 with the indication of the Building Elements © P. Gilento.

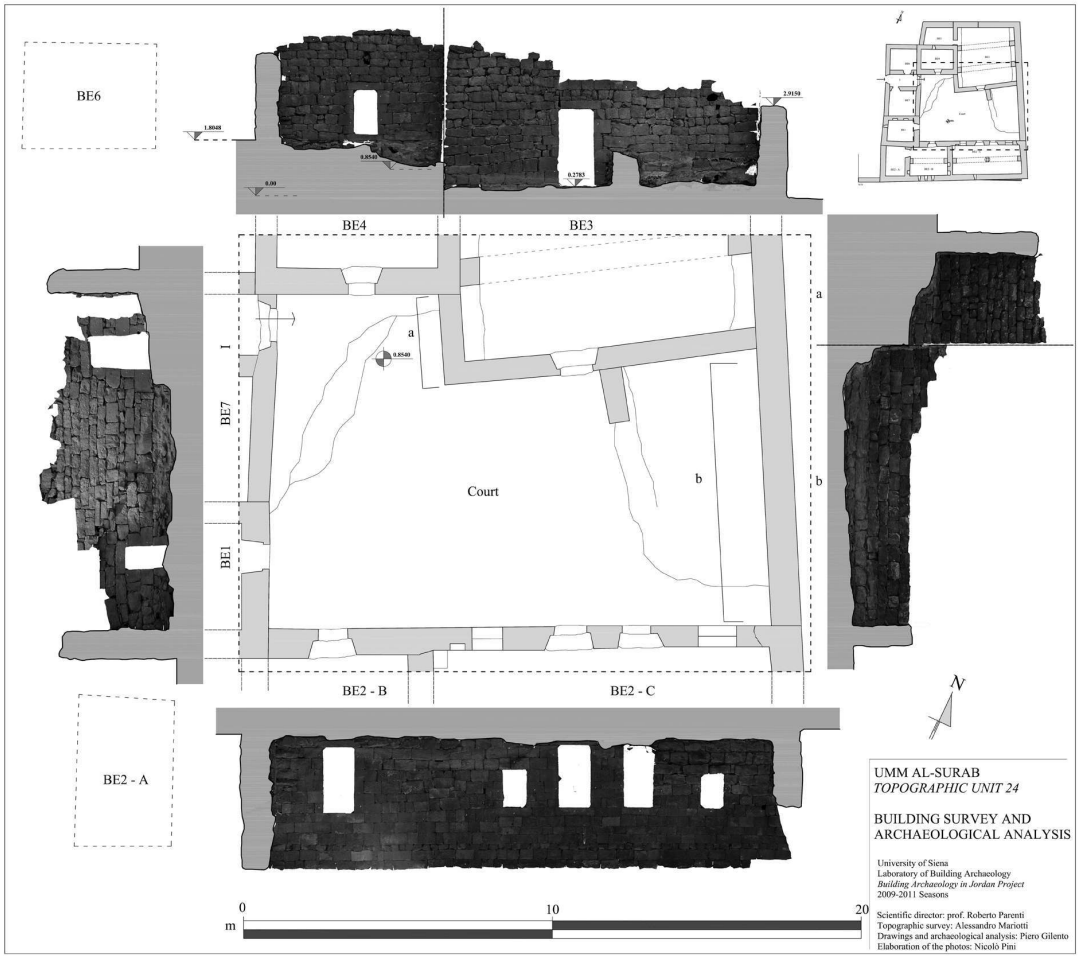

Figure 14. TU 24, the general plan of the courtyard and the orthophotos of the four interior fronts © P. Gilento.

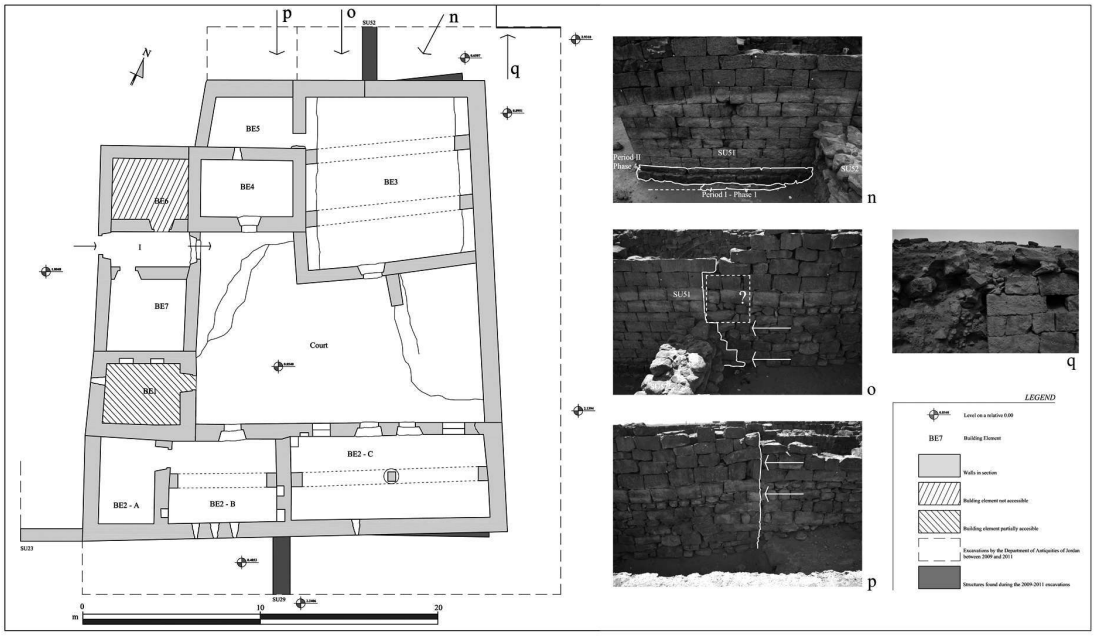

Figure 15. TU 24, photographic documentation of the northern perimeter wall from the north-east showing the wall and the revealed structures during the activities of the Department of Antiquities of Jordan © P. Gilento.

Building phases

Period I-Phase 1. A probable first settlement

The excavations carried out by the Department of Antiquities of Jordan between 2009 and 2011 affected an area about 3 m in width near the southern, eastern, and northern exterior walls of the complex, cleaning these structures from the ground to the foundation level. Thus it is now possible to observe clearly two rows of the foundation levels on the southern and northern exterior sides (**fig. 15n**), under which there are recognizable ashlars that have a slightly different orientation from the upper rows. We believe that these structures might be part of an earlier building whose remains were partially re-used for the construction of the new structure (see Phase 2 and Phase 4). Another hypothesis is that the ashlars above the foundation levels of the southern and northern perimeter walls could be part of a phase of construction activity at the structure or could sign a change in the orientation of the project. Very limited elements of this Phase 1 remain, and at the moment we can assert only that these structures are the oldest ones in the architectural complex in terms of relative chronology. Only further archaeological investigation will clarify the nature of these structures and the probable previous settlement.

Period I-Phase 2. The first two building elements (BE 1 and BE 4)

Two small, independent and separate building elements are part of the first clearly documented occupation of the site. These are the BE 1 and 4 which, although not joined together (**fig. 16**), we believe may belong to the same building phase for different reasons. Firstly, both were built at the same level; secondly, they are typologically very similar to each other, with a simple rectangular plan; thirdly, they are functionally independent, and stratigraphically all later building elements abut them.

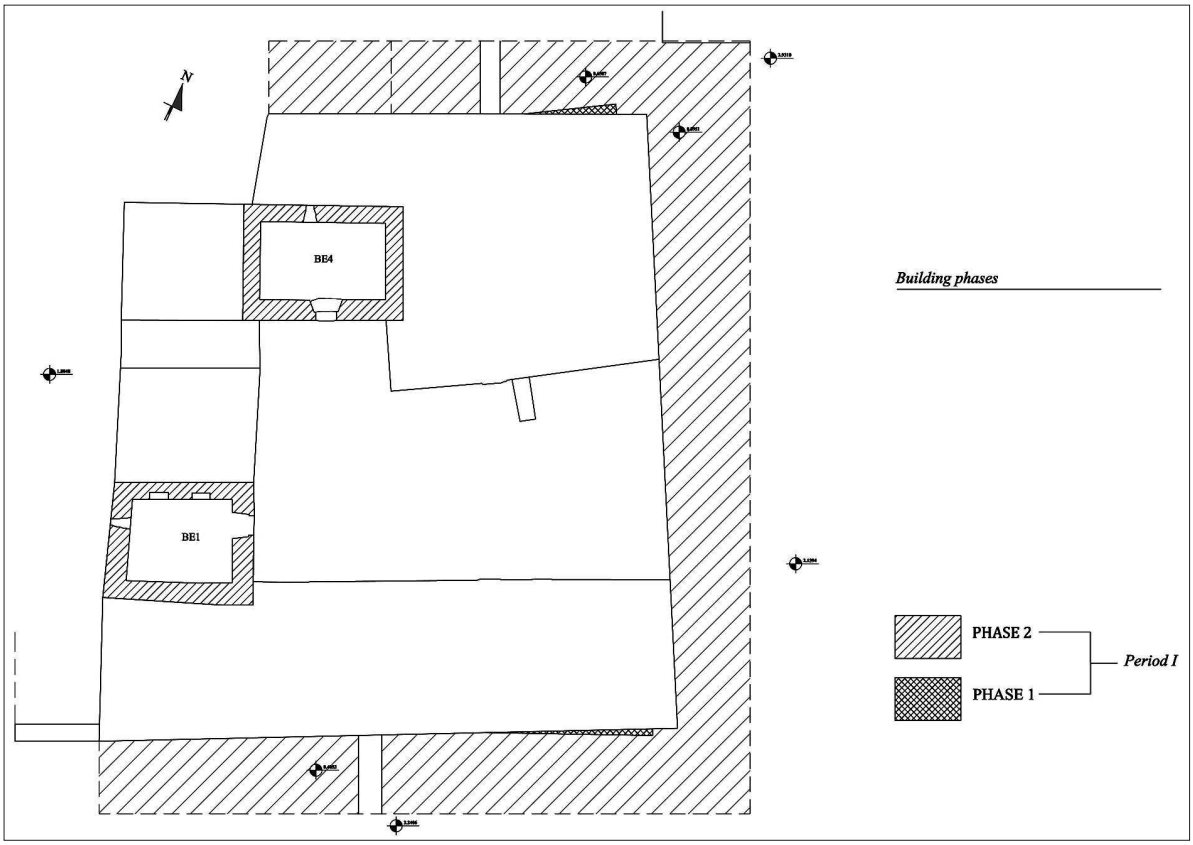

Figure 16. TU 24, Period I, Phase 2. The two structures: BE 1 and BE 4 © P. Gilento.

BE 1 is a rectangular room of 4.40 x 3.20 m with two small windows, built one above the other, in the western perimeter wall and four niches in the northern interior wall distributed in two units on two levels (see also below). The current height of the structure does not exceed 4.50 m, but we assume an original height for this phase of about 6 m, reconstructing the two levels with a flat roof used as a terrace [28]. The outer western wall of BE 1 is composed of ashlar masonry in parallel and horizontal rows with an average height of 0.29 m, a significant presence of wedges (0.3095 m is the surface of the wedges in 1 m^2) for leveling rows, and a limited number of headers (**fig. 17**).

The facing of the ashlars was roughed probably with a spalling hammer sporadically accompanied by a pointed chisel to refine the plan. The length of the ashlars is between 0.2250 m and 0.3315 m, while the cornerstones can reach 1,15 m in length. The corner is not of high-quality workmanship; stretchers are alternated with headers in two or more rows. In the lower part of the wall the foundations (SU 1 and 2) are visible for about 1 m above the current floor level. A row of headers (SU 3) was laid on the foundation wall, on which in turn was built the wall (SU 4) with two small windows. The first window is 1.25 m above the ground and is in the shape of an equilateral triangle measuring exactly 0.20 m on a side (**fig. 18**). The second window is about 2.70 m above the ground and is perpendicular to the previous one; it is rectangular in shape, measuring 0.35 m in height and 0.25 m in width (**fig. 19**). Also noteworthy are four niches distributed on two levels in the interior northern wall; these could have been used to deposit objects associated with daily life. BE 1 is a "tower" (for further discussion of this term see n. 29 and 30) structure on two levels typologically very similar to the nearby BE 4. Traces of stone stairs are preserved on the eastern perimeter wall; these lead to the first floor, of which the threshold and a door jamb of the main entrance are preserved (see also **fig. 14**).

BE 4, built at the same level as BE 1, is located slightly to the north and has a simple rectangular plan measuring 5.20 x 3.20 m with only a small window on the north side. It is completely independent from the other rooms, and the only means of communication is the door on the south side connecting this room to the courtyard. The entrance is 1.50 m high and 0.78 m wide and uses four ashlars as the jamb, with heights ranging between 0.48 m and 0.25 m; a lintel closes the top, while a threshold is preserved at the bottom (see also **fig. 14**). The description of a distinctive masonry technique for BE 4 is more difficult because the external faces are currently not visible due to the overlapping of later buildings and reconstruction of the front-facing courtyard in a different phase.

Discussion of Phase 2

For Phase 2 we assume a "tower" [29] model consisting of individual independent structures of limited size, with a very simple plan on two levels. At the moment we have no certain dating elements to help us define the chronology of this phase, except for the stratigraphic relationships with adjacent building elements that include these two structures as the most ancient ones in a relative chronology. Technical analysis of the structure reveals, however, the absence of supporting arches for the roofs and the presence of a masonry technique on the exterior western wall of BE 1 that is the oldest one (in terms of relative chronology) and different in the stone-working compared to the masonry techniques of later phases.

As already mentioned, we are likely dealing with a tower-shaped typology that we can suppose, due to its shape, to have surveillance and defense functions. This hypothesis is strengthened by the location of TU 24, situated at the south-eastern fringe of the village and near the route of the *Via Nova Traiana*,

28. This is only a hypothetical reconstruction based on the preserved material structure and on comparison, for example, with a single house in the southern part of the village (see also **fig. 8c**). We cannot exclude the presence of another level (for a total of three levels), as can be observed in other buildings in the same village, such as TU 9.
29. In this case, we use the term "tower" to indicate a building model with a simple plan (quadrangular or rectangular in shape with one or two rooms) in which the width and length are less than the height. This typology can include types of towers that differ in their levels, positions (isolated or inserted in an architectural complex) and functions, which can change over time. Other comparisons in the region could be very useful in the creation of a structured chrono-typology for this building model (see also n. 31).

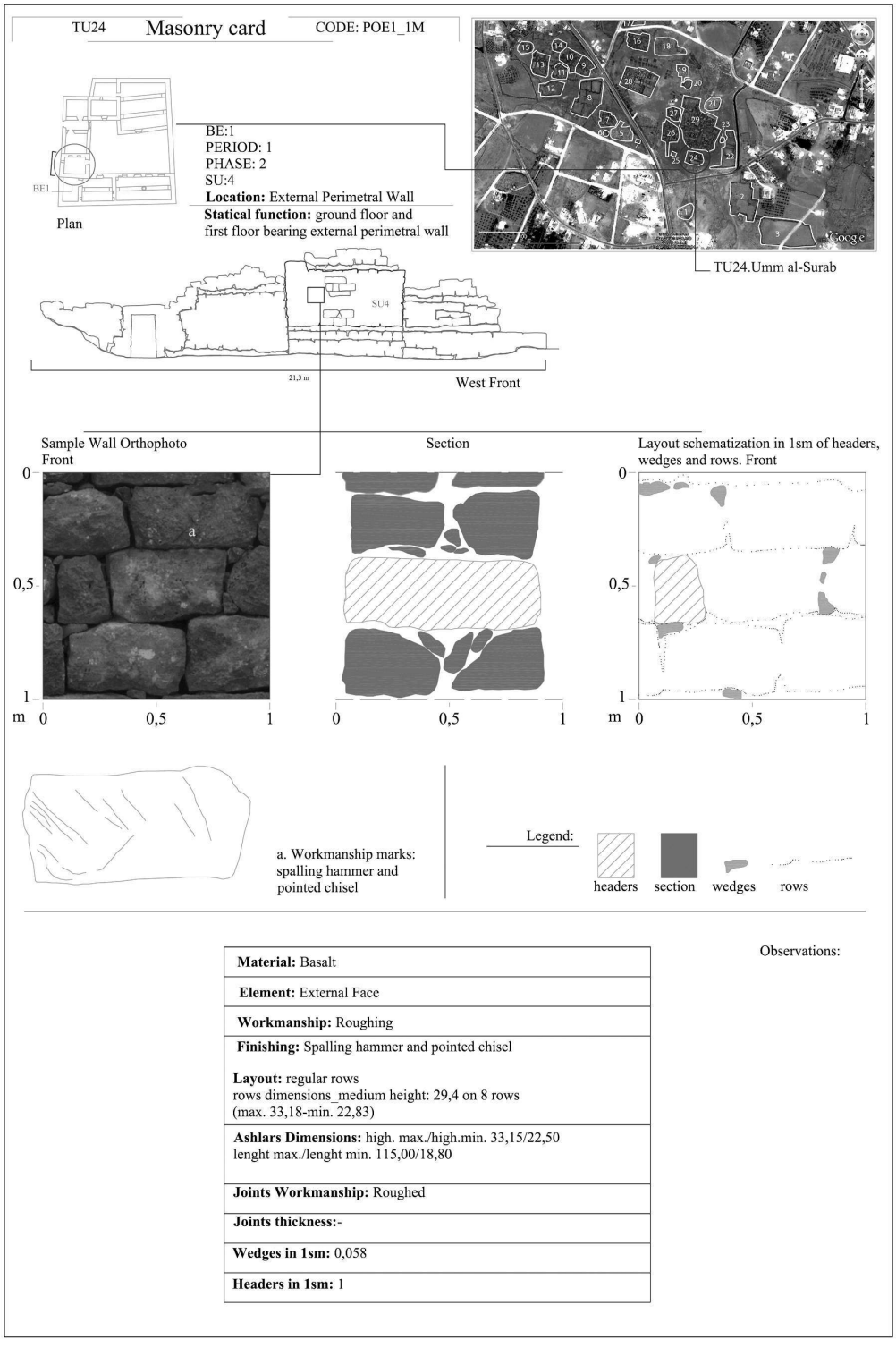

Figure 17. Details of the main masonry technique of Phase 2, Period I in TU 24
© P. Gilento.

Figure 18. Triangular window of Phase 2 (BE 1, SU 4, Period I)
© P. Gilento.

Figure 19. Rectangular window of Phase 2 (BE 1, SU 4, Period I) © P. Gilento.

which followed more or less the same route as the modern road. The BE 1 and BE 4 of TU 24 were, in this phase, the first structures visible reaching Umm al-Surab from Umm al-Jimal. Without other material data to analyze it is very difficult to attribute a specific function to a building model; in fact in the same phase a building can be used with one or more functions and a function can change during the time. Another hypothesis, for example, is a domestic function where the ground floor could have been used as a stable for small animals, and the first floor has been dedicated to the family activities [30]. In the BE 1 an external basalt staircase was the connecting element to the first floor and to the terrace at the top.

30. This hypothesis is based on the main bibliography on this subject; see VILLENEUVE 1985, p. 96-98. In this case it is also important to make careful distinction between the functions and the models. In fact, the examples reported by Villeneuve have a plan composed of one or two rooms on each of two levels. In our case, we have only one room on each of the two levels.

Only a diachronic and synchronic comparative study of similar building models in Umm al-Surab, the neighboring villages and, for example, the villages of Trachonitis [31] might shed light on the diffusion and the functions of the "tower" typology.

Period II-Phase 3. The construction of the southern wing (BE 2)

The building element 2 was built in Phase 3 partially abutting the walls of BE 1 (Phase 2) and covering the structures of Phase 1. It is a long rectangular structure, oriented east-west and consisting of three juxtaposed rooms (A, B, C) constructed in a single phase (**fig. 20**). Room A (3.15 x 4.90 m) was a service space for the largest and most elegant Room B, which measures 6.15 x 4.70 m and is provided with a supporting arch on piers complete with capitals (**fig. 20**). The piers are 1 m high and 0.80 m wide; the molded capitals are 0.28 m in height [32].

The ashlars of the piers and the capitals are finely squared, their faces worked with a pointed chisel and their joints matched perfectly, signs of a highly-skilled workforce. On the eastern and western sides of Room B, near the piers of the arches, are located two specularly-placed niches at 0.60 m above ground level that are identical in size: 0.80 m high, 0.70 m wide, and 0.47 m deep. These two niches might have been used as storage spaces for objects, rather than as mangers. We believe that this room had a residential function, probably as a "state" room for the family, because of the presence of architectural and decorative elements of high stylistic quality, unique in the entire complex. Although Room C has suffered heavy collapses and subsequent reconstructions, the plan of the room seems to remain the same as the original one of this phase, in which it appears to be a rectangle of 11.20 x 4.70 m with a roofing system supported by one or more transverse arches [33].

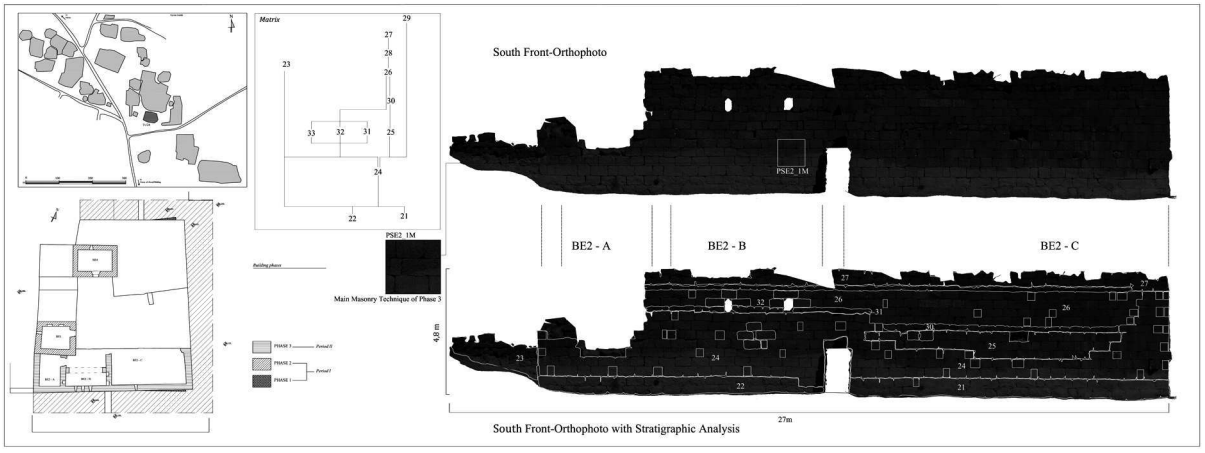

Figure 20. The southern front of TU 24 showing the stratigraphic analysis, the characterization of the main masonry technique of Phase 3, and the Harris matrix © P. Gilento.

Turning our attention to the exterior of the structure, we observed that the southern perimeter wall was built in a single construction activity (SU 24). Two rows of the foundation wall are clearly visible at ground level, consisting of ashlars with simply roughed-out faces and measuring up to 1 m in length and 0.40 m in height (SU 21 and 22) (**fig. 20**). The perimeter wall is characterized by a masonry technique of double faces with headers. The ashlars are laid in regular and parallel rows with an average height of

31. In this regard it is interesting to recall the study of several villages around Mseikeh (modern-day Syria) that are characterized precisely by towers used to defend the Trachonitis area; these towers can be dated to the 2nd or 3rd cent. AD (GUÉRIN 2008, p. 272). At the moment a reliable comparison cannot be made between the model tower in Trachonitis and the one in the southern Jordanian Ḥawrān, but it is interesting to take into account the presence of this settlement system during the Roman period, linked to the main road network of the region.
32. The arch that can be seen today was re-built in Phase 7, re-using some of the voussoirs of the original arch (see below).
33. The two longitudinal arches visible today were rebuilt along with the roof in Phase 7.

0.35 m and a length between 0.20 m and 0.96 m; the headers have a frequency of 0.89/m^2 (**fig. 21**). The face was probably worked with a pointed chisel, but we cannot exclude the use of a pick. The ashlars have squared edges, while the presence of wedges between one element and another is minimal. The working process of the faces does not use an angle of 30/45 degrees as we can observe, for example, in Phase 2 (Byzantine period) of the Church of Saints Sergius and Bacchus.

During the construction of the wall a slit 0.34 m wide and 0.10 m high was made in the western part of the wall, about 2.10 m above the ground level. Particular attention was paid to the construction of the south-eastern corner, composed of well-squared ashlars with a regular proportion of 1:1 between the headers and stretchers. The ashlars have a maximum length of 1.20 m, giving greater stability to the corner (**fig. 22**).

To the same phase belongs the wall SU 35, 6.22 m in length, on the eastern side of the structure (BE 2). Also on this side of BE 2 it is possible to observe two rows of the foundation (SU 34) composed of large, simply roughed-out blocks with small wedges inserted vertically and transversely into the joints. The first three rows of the wall are structurally connected to the southern row (SU 24), with which they form the south-eastern corner of the complex. The eastern wall, however, was heavily damaged by a collapse which affected the roof as well. The south-eastern corner is the only element to have survived the collapse in part, demonstrating the good quality of its construction.

Typological and chronological discussion of Phase 3

The construction of BE 2 that abuts BE 1 represents a first major phase of enlargement of the structure. In this phase we have a large L-shaped block with openings facing north; at the same time BE 4 continues to remain an isolated building. If we assume a domestic function for the building elements of Phase 2, it is possible that Phase 3 reflects the expansion and enrichment of the family, as is shown by the size of building element 2 and the presence of worked piers and capitals. On the other hand, if the function of BE 1 and BE 4 of Phase 2 was defense, we can consider a change of function of these two buildings when they were incorporated into a new and articulated architectural context. We can also argue that the two towers of Phase 2 continued to maintain a defense/surveillance function in a domestic context. The distinctive building typology for this phase is a large rectangular body with three juxtaposed rooms on a single level, covered by a terrace.

At the moment the chronology of this phase can be determined only through typological comparisons of capitals and piers in the supporting arch of Room B. The piers are typologically similar to those present in the counter-façade of the Church of Saints Sergius and Bacchus, dating to 489 AD, albeit with some slight differences. The ashlars of the piers are alternating squared headers and stretchers with perfectly matching joints between them; the high quality of these elements indicates that they could have been created only by skilled workers. The capitals in Room B are very common, in both churches and houses of the Ḥawrān region, in a period between the 5th and 6th cent. AD [34] (**fig. 23**). We cannot exclude, however, a diffusion of these capitals and piers in other periods, although less frequent. Thus this phase can be attributed to the Byzantine period and may correspond to the overall development and expansion of Umm al-Surab, passing from a scattered to a more structured and defined settlement model, when religious buildings such as the Church of Saints Sergius and Bacchus and, probably, the West church are also constructed.

The representative masonry technique for this phase can be compared to a technique of Phase 3 in the southern perimeter wall of Room 19 in TU 28 at Umm al-Surab and with the technique of Phase 3 in the western wall of the Barracks at Umm al-Jimal (for a complete discussion, see also below) [35].

34. During the survey in the village of Umm al-Surab, we found capitals that are typologically very similar to those in Room B of BE 2, for example those in TU 16; at Umm al-Jimal we can indicate the presence of similar capitals in the so-called West church (**fig. 23m**). For a comparison in the Syrian Ḥawrān, see also LÉNA 2008, pl. VIII, p. 129.
35. GILENTO 2013.

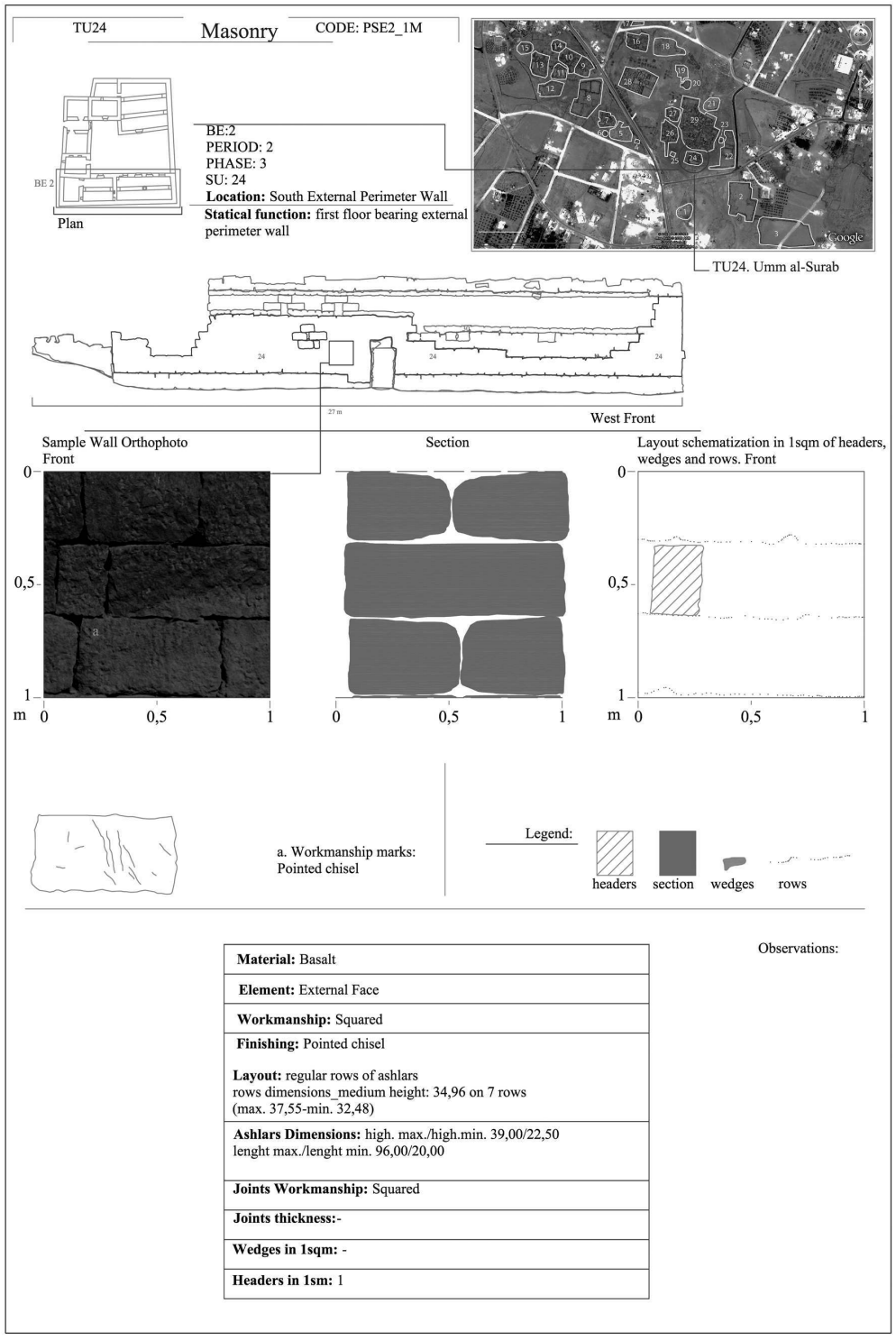

Figure 21. Masonry card for the main masonry technique of Phase 3 (BE 2, SU 24, Period II) © P. Gilento.

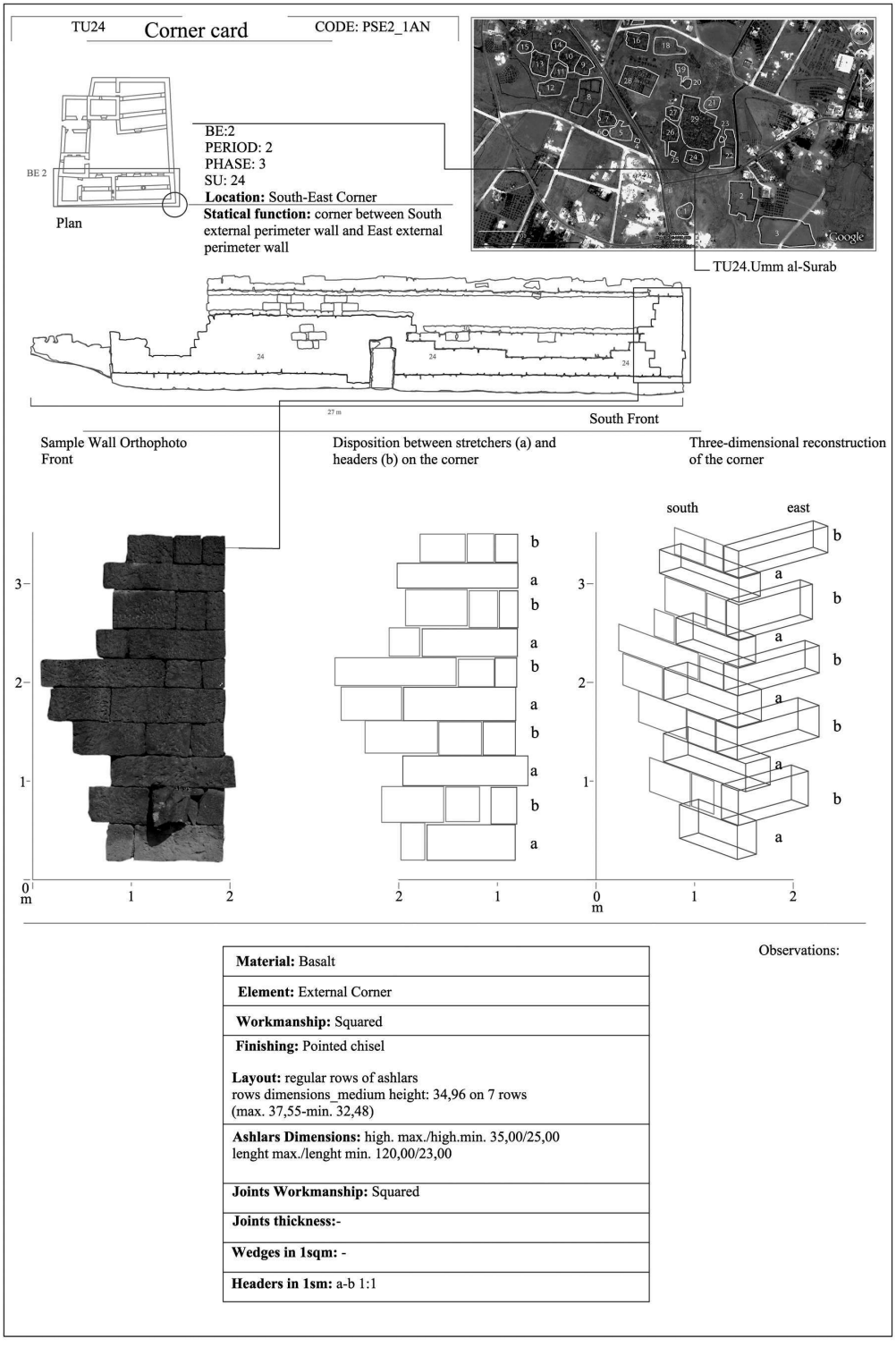

Figure 22. Technical details of the south-eastern corner of the complex, with the study of headers and stretchers (BE 2, SU 24, Period II, Phase 3) © P. Gilento.

Period II-Phase 4. A first enclosure

The construction of the eastern perimeter wall (SU 44) of the building complex belongs to Phase 4 and presents a masonry technique differing in some respects from SU 35 of Phase 3, which it abuts. In this case, too, the first two rows are the foundations (SU 43) of the main wall (SU 44), from which they differ in dimensions and less careful finishing of the ashlars (**fig. 24**). The masonry technique of SU 44, consisting of squared blocks in parallel and horizontal rows, presents only slight differences compared to the building technique of SU 35: more surface between courses, small wedges filling the empty spaces between ashlars, and a reduction in the number of headers. The eastern perimeter wall extends about 19.40 m from south to north and bonds with the perpendicular wall (SU 51), which uses the same masonry technique; the intersection of these two walls forms the north-eastern corner of the complex. SU 51 is preserved on the northern side for about 5.00 m in height and extends to the west for about 6.50 m, where it is abruptly interrupted. In this case we do not know if this abrupt interruption in the wall corresponds to a corner that originally closed the room on the west side, or if it is part of a window or a door (**fig. 15n, o**).

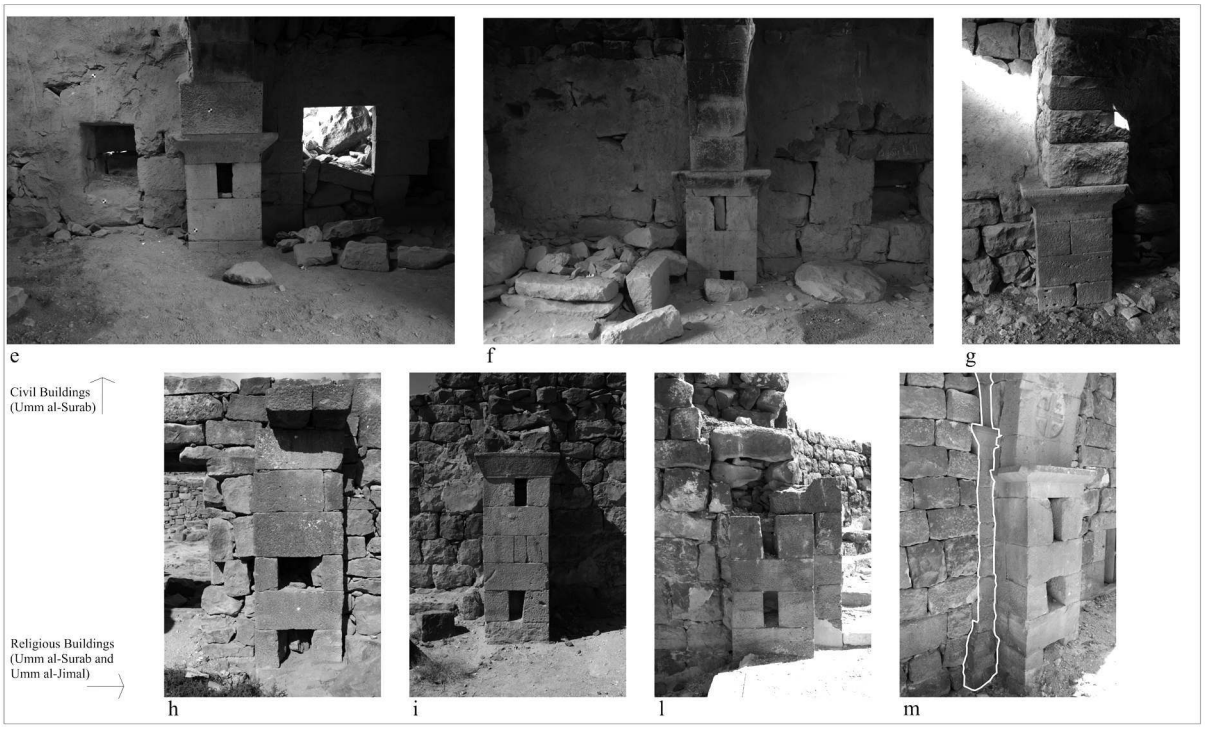

Figure 23. Piers and capitals from civil buildings in Umm al-Surab: e. TU 24, BE 2B, west wall; f. TU 24, BE 2B, east wall; g. comparison with TU 16. Piers and capitals from religious buildings from Umm al-Surab: h. northern pier of the Church of the Saints Sergius and Bacchus and from Umm al-Jimal: i. and l. from the so-called Cathedral and m. from the West church, where it is possible to observe the presence of the two different piers with capitals © P. Gilento.

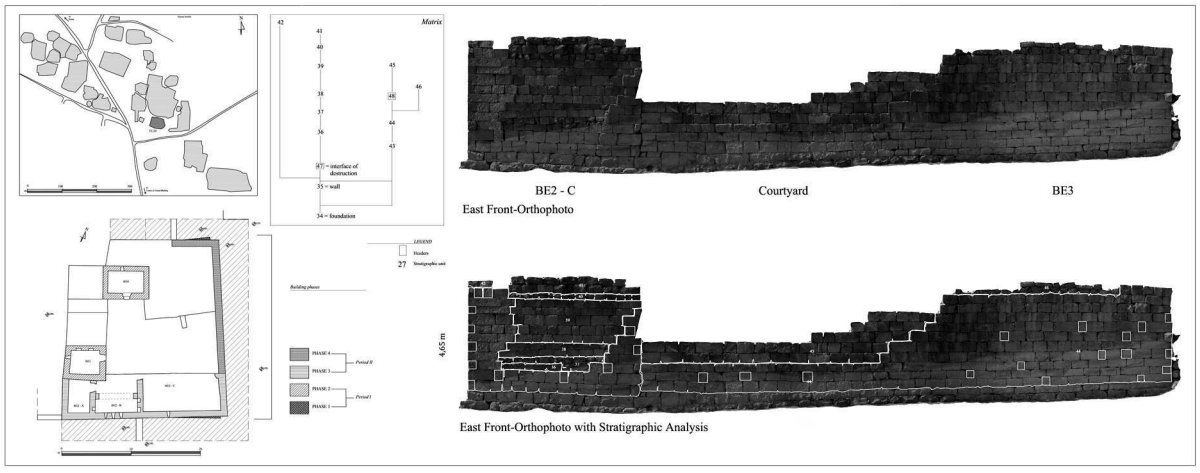

Figure 24. TU 24, the eastern perimeter wall from outside showing the stratigraphic reading of the surfaces and the relative Harris matrix © P. Gilento.

Discussion of Phase 4

Phase 4 gives the clear idea of a first enclosed space; in fact, the wall SU 44 defines an enclosure on the eastern side of the complex, currently the only one that does not contain domestic structures. Later the northern perimeter wall was in part demolished, or collapsed, and a new square room was built (see Phase 5). As for the dating of this phase, we believe that it represents more or less the same chronological period as Phase 3, due to the presence of a masonry technique similar to SU 35 dating to Byzantine times (5th-6th cent.).

Period II-Phase 5. The great room of the northern sector (BE 3)

A large quadrangular room (BE 3) of 9.10 x 8.65 m was built in the north-eastern part of the complex, partially exploiting the presence of previous structures (**fig. 25**). After the interruption of SU 51, was built a wall with a masonry technique typologically very distinct which, about 4 m further to the west, forms a right angle in line with the eastern perimeter wall of BE 4 (**fig. 15n, o, p**). To the south, towards what we can begin to call a courtyard, the southern wall delimiting the new BE 3 was built abutting BE 4 to the west and SU 43 and SU 44 of the eastern wall to the east.

The masonry technique characterizing this phase, as already mentioned, is completely different from the previous ones due to an irregular disposition of the ashlars and the presence of stones of varying dimensions, a clear sign of re-used materials.

The front of the wall is composed of sub-horizontal rows of rectangular ashlars between 0.30 m and 0.50 m long and about 0.35 m high, alternating with much smaller and more irregular elements. A row of headers with wedges is present in the middle part of the wall, used as the base for a further elevation of the northern perimeter wall in large square blocks.

Interpretation of Phase 5

The construction of BE 3 signals a powerful change in the distribution of space. For this phase, a U-shaped general plan is proposed; the only side remaining open was the western one. The new rectangular room, built using part of a previous structures, may have had two parallel arches supporting the large roofing system. The arches preserved today are the result of a subsequent reconstruction, along with the mangers, which abut the perimeter walls (see Phase 7).

We do not have reliable dating elements to propose a chronological horizon for this phase. As we have already mentioned, the supporting arches were re-built, and the building technique is not particularly

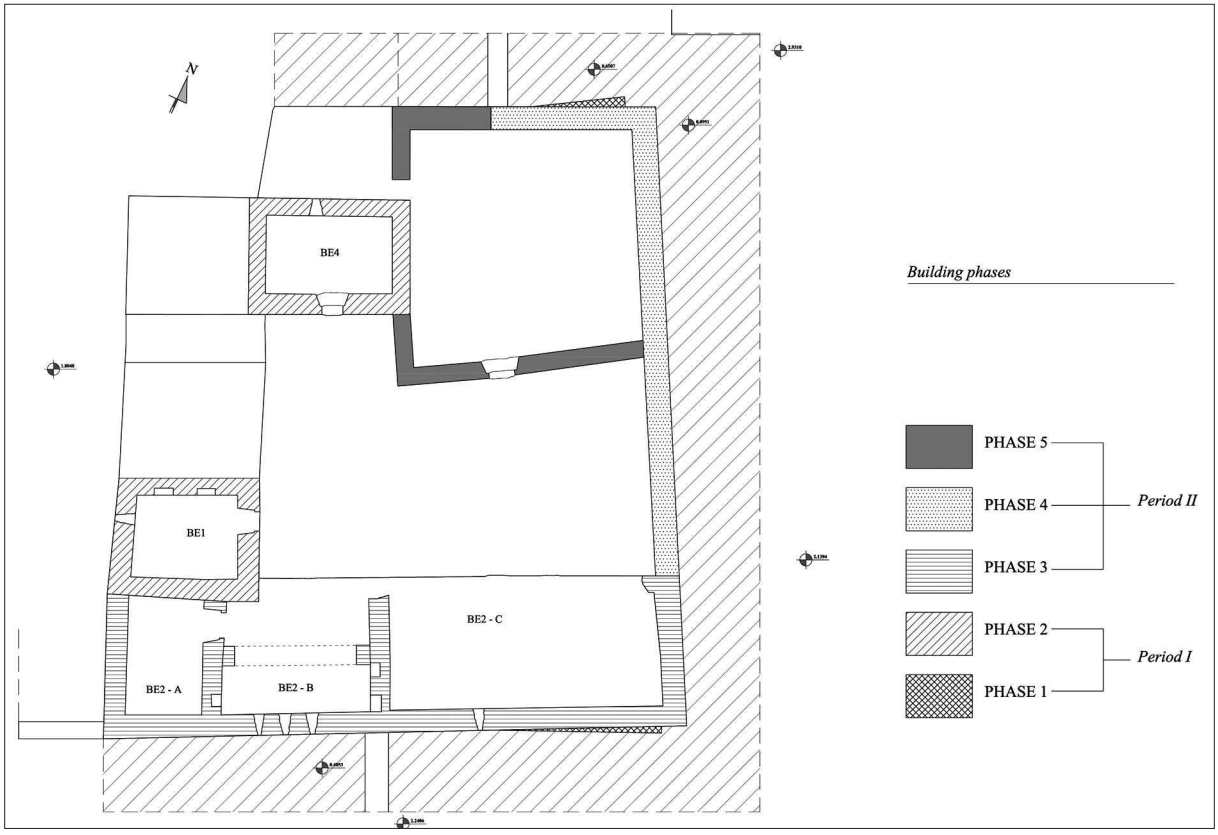

Figure 25. TU 24, plan of the Period II, Phase 5 © P. Gilento.

distinctive, involving heterogeneous re-used elements. In any case, the reorganization of this part of the complex follows the Byzantine period, and thus we can assume the late Byzantine period or its immediate aftermath (for the front in the courtyard see also **fig. 14**). Of course, the chronological limits of this phase can be clarified only by further investigation.

Period II Phase 6. Enclosed space

In this phase the space of the complex was closed by the construction of the main entrance on the west side abutting BE 4 to the north and BE 1 to the south. It is a double entrance, a hallway (I) with two lateral service rooms on the northern (BE 6) and southern (BE 7) sides (**fig. 26**). Masonry techniques at the front of the entrance employ ashlars in irregular rows, most of them roughed, suggesting that the door may have been rebuilt after a cut in the wall. The technical and formal quality of this door is very low, despite its function as main and unique entrance to the courtyard (**fig. 27**).

This main entrance follows the general austerity of the complex's exterior design and appears almost to disguise the different interior situation in this phase consisting of a large open space, the courtyard, surrounded by many rooms. The jambs of the main entrance are composed of five elements supporting a monolithic lintel; the faces of the ashlars are simply roughed. Beyond the main entrance there is a hallway (I) 5.90 m long and 1.80 m wide passing through another door and leading directly to the courtyard. Before entering the courtyard, on the right side, there is an entrance to a rectangular room (4.00 x 4.30 m), BE 7. Another room on the left (BE 6), specular to BE 7, is currently not accessible; however, the original measurements may have been about 3.45 x 4.25 m. In both cases they may have functioned as service rooms (see also **fig. 14**).

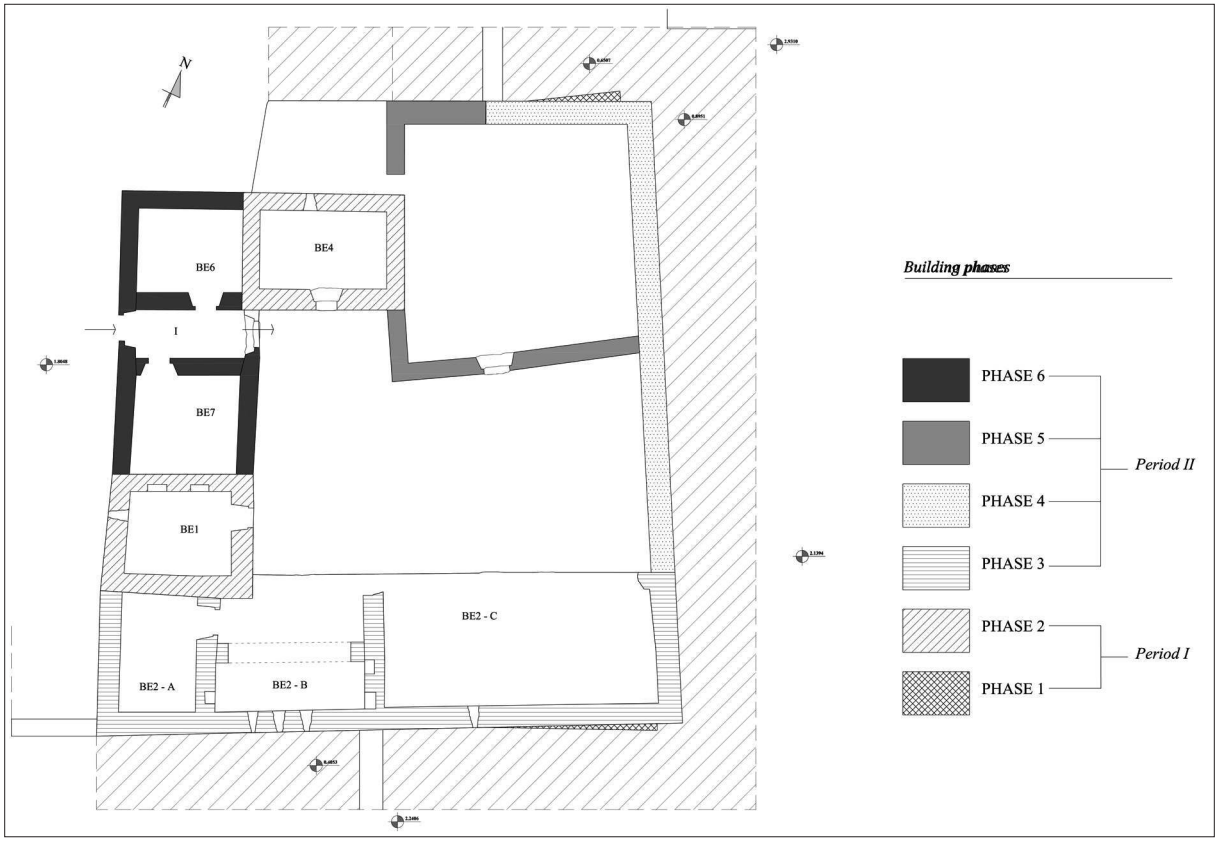

Figure 26. TU 24, plan of the Period II, Phase 6 © P. Gilento.

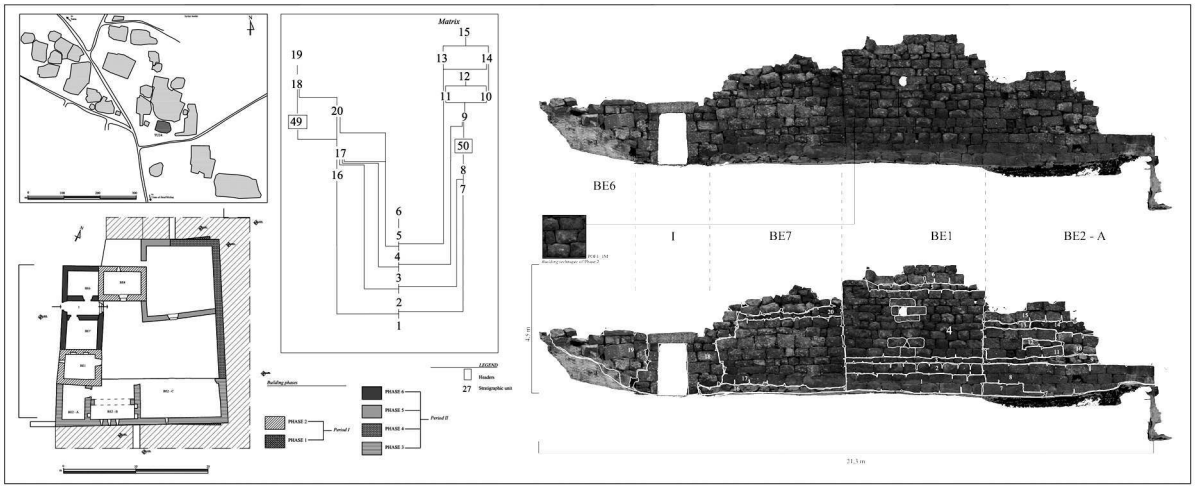

Figure 27. The western front of TU 24 showing the division of the main building elements (BE 6, BE 7, BE 1, BE 2A), the stratigraphic analysis, the main masonry technique of Phase 2, and the Harris matrix © P. Gilento.

Interpretation of Phase 6

In this phase the complex assumed the shape that has partly characterized it until today: a large rectangular block surrounded on three sides by rooms facing onto the wide L-shaped courtyard. The rooms and their disposition are functional to serving two or three family units; the courtyard may have served as a space for keeping animals safe and performing common activities linked to the agricultural and pastoral world typical of the area since ancient times. We can assert that the families occupying the complex were not rich, given the total lack of architectural decorations and the simple organization of space and buildings; in any case, they had the opportunity to enlarge their property over time and build a safe environment in which to live. At the moment we do not have reliable data to suggest a secure dating for this phase which can, however, be ascribed to a late Byzantine/early Islamic context thanks to the stratigraphic relationships and the masonry techniques, which differ significantly from Byzantine technology.

Period III-Phase 7. Additional structures and reconstruction of the roofing systems

To this phase we attribute various building activities: the addition of BE 5 in the north-western corner of the complex, the rebuilding of arches and roofs in BE 2 and BE 3, and the construction of mangers in BE 3 (**fig. 28**).

BE 5 is a small service room (4.30 x 2.80 m) which can be accessed only from the north-western corner of BE 3 via a small door 0.80 m wide and 0.90 m high. The northern and western perimeter walls of BE 5 consist of a masonry technique of ashlars arranged in an irregular manner, with a large quantity of wedges inserted into the joints. These elements indicate an apparent lack of experienced workers. Previous structures were re-used to make the eastern and southern sides of this little room.

The complex has been affected by the collapse of the roofs and walls of BE 2 and BE 3 and probably also of other rooms. Subsequently the southern and eastern perimeter walls of BE 2 were rebuilt along with the entire roof. We do not know how much time passed between the collapse and reconstruction; however, the same ashlars were used to rebuild the partially collapsed walls and two new windows were opened in Room B and another one in Room C. Rebuilding of the southern perimeter wall started with the repositioning of three rows of ashlars (SU 25) on the wall SU 24 and the opening of an *oculus* on the western side of the wall. On these three rows was laid a single row of headers (SU 30) as a base for four more rows of ashlars (SU 26) on which, in the east part, two quadrangular windows 0.50 m high and 0.30 m wide were opened (see also **fig. 20**).

Another level of headers (SU 28) was positioned on the stratigraphic unit composed of four rows of ashlars (SU 26); SU 28 closes the upper part of the wall, which is abutted by the truss of the rebuilt roof (SU 27). To the same phase we attribute the reconstruction of the eastern perimeter wall (SU 45) with a low percentage of headers. Arches were rebuilt in Rooms B and C using same elements, sometimes re-worked. The two longitudinal supporting arches in Room C have a central base composed of a Doric capital probably coming from the nearby Church of Saints Sergius and Bacchus. The re-used capital is a clear sign that, when arches were rebuilt, the most important church of Umm al-Surab was certainly abandoned.

The rebuilt arch in Room B is different from the arches of Room C: it is supported on piers of Phase 3, while the others were built without piers, springing directly from the ground (**fig. 29**). The same typology of arches springing directly from the ground was used to support a new roof (of which no trace remains today) for BE 3. Also in this case parallel arches, 2.50 m distant from each other, were rebuilt after the collapse of the ceiling. The springs of these arches consist of two ashlars embedded in the walls and arranged transversely with respect to the voussoirs, a system used widely in rebuilt arches, such as the arch in Room 5 of TU 28. Stone mangers were built abutting the northern, western, and eastern walls of BE 3.

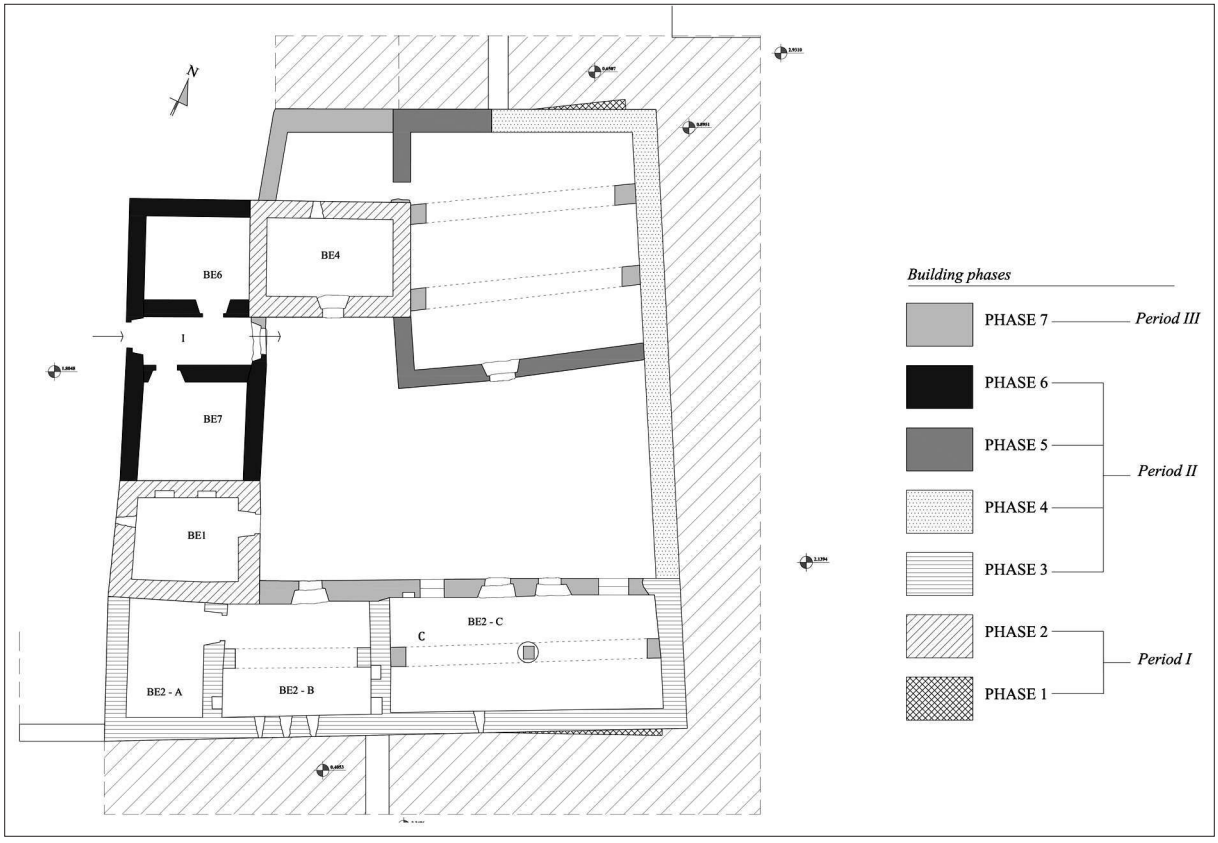

Figure 28. TU 24, plan of the Period III, Phase 7, that shows the multiple activities of construction © P. Gilento.

Figure 29. TU 24, a re-built supporting arch in room BE 2C. This type of arch is typical of rebuilding phases, and it is also present in room BE 3 of the same complex © P. Gilento.

Abandonment and re-use

The complex was finally abandoned and various rooms such as BE 1 and BE 6 fell into ruin because of the collapse of the perimeter walls. The roofing system of BE 3 suffered a further collapse affecting the southern arch, which was never rebuilt; other small rooms such as BE 4 and BE 7 lost their roofs, but the walls remained intact. The roofing systems of Rooms B and C of BE 2 of the last phase of the complex are still *in situ*. The site has certainly provided excellent material for re-use in houses of the modern village, and in recent times at least the two covered rooms have been used as stables.

Building techniques as chronological Elements

The literature [36] indicates that it is particularly difficult to obtain chronological information from the study of construction techniques employing basalt for various reasons, which we agree with in part: the re-utilization of materials, the continuity of techniques, the physical properties of basalt (its hardness and thus the difficulty of identifying signs of handling or manipulation on the surface), the lack of reliable chronological contexts. Thus in this paper we have tried to reflect on the use of stratigraphic analysis and the characterization of building techniques to obtain, at least, a relative chronology.

The architectural complex has not left us absolute chronological elements, such as inscriptions or a structured decorative program, with which to make reliable typological and chronological comparisons. Nevertheless we have attempted to propose initial chronological attributions for the complex, thanks to the study and comparison of building techniques. Stratigraphic analysis of standing remains served as an important tool in defining an initial relative chronology among various buildings of the architectural complex (**fig. 30**). Future archaeological excavations could shed more light on the evolution of TU 24. Phase 3 has been dated to the Byzantine period thanks to the piers and capitals of BE 2, which have been typologically compared with other, similar elements.

Masonry techniques have been used to define the chronology of the architectural complex more clearly, although it is necessary to be careful to make comparisons between structures that are typologically different. In this case we attempt to compare the following masonry techniques: the southern perimeter wall of BE 2 demonstrates a masonry technique typologically closer to that of Phase 3 of the Barracks in the nearby village of Umm al-Jimal and to that of Phase 3 of TU 28 at Umm al-Surab [37]. These two latter masonry techniques are dated to the Byzantine period (5th-6th cent. AD) by stratigraphic relationships, inscriptions and typological comparisons. The same chronological horizon has been proposed for the piers of the arches in Room B of BE 2 (see also **fig. 23**). We can therefore conclude that Phase 3 of TU 24 belongs to the same chronological context (5th-6th cent.), providing an important starting point from which to develop further reflections on the evolution of the structure.

Conclusions. Analysis of a complex model

Stratigraphic analysis of TU 24 at Umm al-Surab has shed light on the articulated building history of a residential complex. This structure currently has a rectangular plan, with a large L-shaped courtyard, surrounded on three sides by different juxtaposed rooms, while the fourth side is closed by a simple wall.

The most interesting aspect of the analysis performed on TU 24 was identification of the different building typologies which interacted with the previous ones to create the current structure. After Phase 1, characterized by uncertain typological attribution, we can ascribe to Phase 2 two small structures with rectangular plan on two levels. Subsequently, in Phase 3, the general plan of the complex is L-shaped

36. Bessac 2010.
37. For a complete discussion on this theme with the relative graphic documentation see also Gilento 2013 and Gilento 2014e.

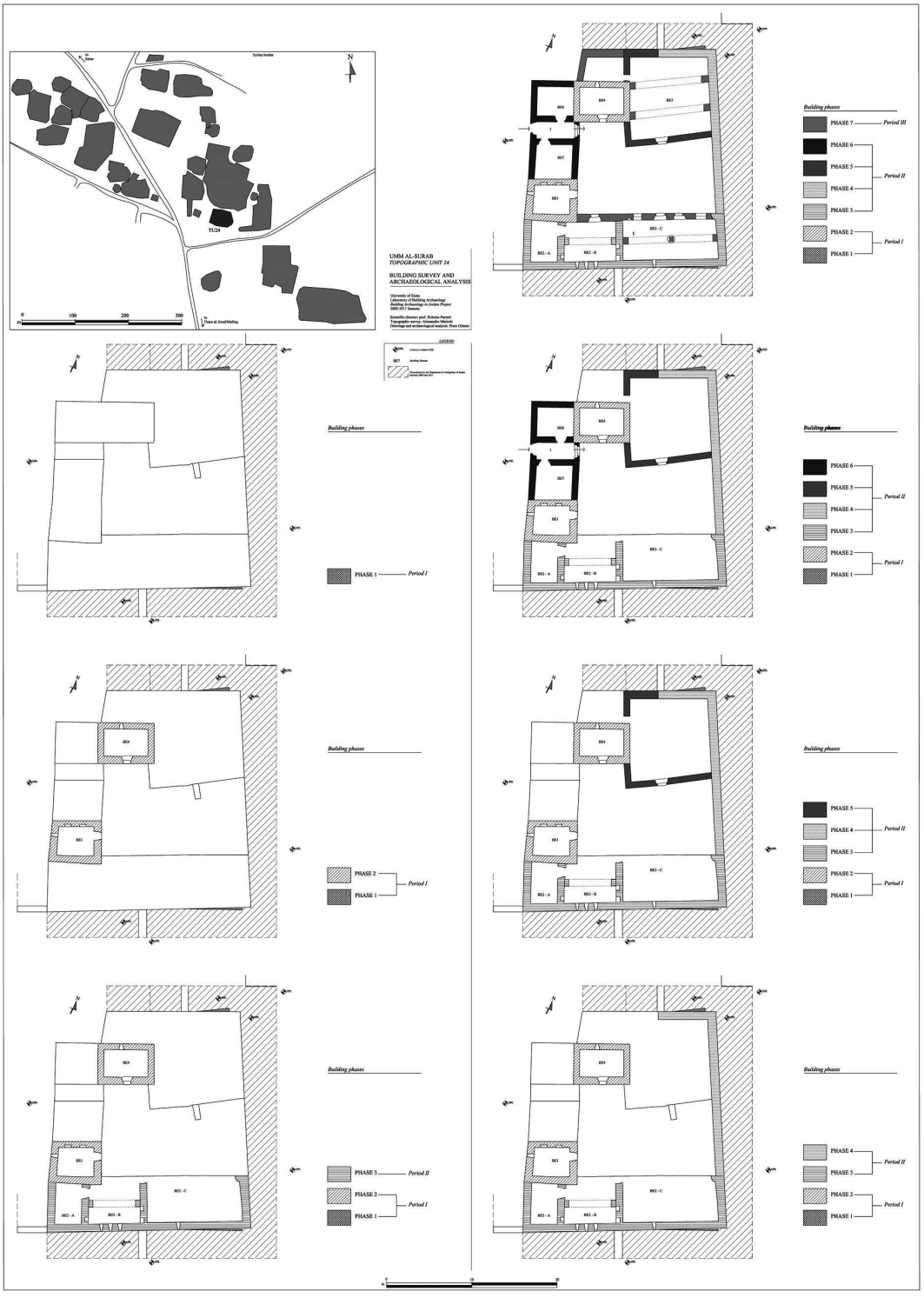

Figure 30. Summary of the general evolution of the TU 24 on a relative chronology © P. Gilento.

with the addition on the south side of a large rectangular building on a single level, consisting of three rooms arranged longitudinally (Byzantine period). In Phase 4, the building becomes larger, and the closure of the spaces begins with the construction of a boundary wall linking previous structures to the new one built on the opposite side of the open space. The plan of Phase 5 is U-shaped, and the process of closing spaces clearly continues with the construction of additional rooms. Only after this phase "is the square closed" with the construction of an entrance with a hallwayand two service rooms on both sides. Thus it is only in this phase that the building assumes the "classic typology" with large internal courtyard as previously described by Butler.

We have identified in a single residential unit four different building typologies, which have a value as single elements considered diachronically in a complex model. In fact each floor-plan typology is related to a specific building period with its social, cultural, and economic features which change over the time and leave their marks on the material structure.

Starting from an analysis of building archaeology, we have also obtained data which, although still partial and inserted into a context of relative chronology, can enrich our knowledge of the ancient Ḥawrān in two main perspectives. On the one hand, thanks to the possibility of analyzing large portions of standing remains and different construction techniques, we were able to study in greater detail building technologies that were employed, and construction types that were developed, over time. On the other hand, from an historical point of view, we can consider the "micro-history" of TU 24 in line with the development of other villages in the area between the 4th and the 6th cent. AD. This trend corresponds to extensive building activity evident in the construction of many churches, but also in the development of civil and domestic architecture. Phases 3 and 4 of TU 24, attributed to the Byzantine era, are part of a construction project that includes previous structures (BE 1 and BE 4) of Phase 2, typologically identified as "towers". Phase 2 can be inserted into a historical context, probably related to the presence in the territory of the Romans who built (and subsequently controlled) the *Via Nova Traiana*, whose main track is visible still today 1 km from Qasr al-Bajj [38]: about 5 km from Umm al-Surab. In this historical context, towers can assume an important role of defense and control of the territory. It is important remember that towers can also be linked to different functions. As Butler noted, "*... the type of house with a high tower attached to it is more distinctive ... These towers are a feature of the domestic architecture of the eastern and southeastern slope of the Djebel Hawran*" [39].

In order to broaden the historical picture of our research, we must consider several inscriptions which, although not directly connected to TU 24, nevertheless come from the same village of Umm al-Surab. One of these, a Greek inscription in two fragments [40], could indicate, on the one hand, the presence of a military prison connected to the nearby village of Umm al-Jimal, where the presence of the most important military garrison in the region is recorded [41]. On the other hand, this inscription could attest the presence of a waypoint of the *cursus publicus*, since it is located on the important road axis between Jerash and Bosra [42]. Nabataean inscriptions [43] document the occupation of the site during this period, although it is more difficult to identify material structures that belong to it. We have attributed to the Islamic period (Phases 6 and 7) various rebuilding activities in TU 24, although, in this case, we are far from a precise chronology. The Islamic period is best documented by the evident construction activities at the Church of Saints Sergius and Bacchus [44], such as the construction of the minaret, although in this case there are also specific chronological problems to resolve.

A more detailed picture of the chronological evolution of TU 24, and at the same time a deeper understanding of the ancient landscape, can be made only with a greater number of comparisons

38. Kennedy 2004, p. 93-94.
39. Butler 1919, II.A.2, 126; Butler writes about Is-Safiyeh, a village in modern-day Syria.
40. Bader 2009, p. 64, inscr. n. 63 and 64, Fragment A and B.
41. M. Sartre, *AnnÉpigr*, 1996, 1614, cited in Bader 2009, p. 64.
42. Feissel & Gatier 1998, cited in Bader 2009, p. 64.
43. Butler 1919, II.A.2, p. 95.
44. Gilento 2014e.

(typological and structural) between the building techniques of different structures in the Ḥawrān region, accompanied by landscape surveys and specific stratigraphic excavations to reach an absolute chronology. Nevertheless, thanks to the contribution of building archaeology, we were able to develop an initial detailed analysis of a complex model relying only on a reading of the wall features and an analysis of the building techniques.

Bibliography

Al-Maqdissi (M.), Braemer (F.) & Dentzer (J.-M.)
2010 *Hauran* V. *La Syrie du Sud du néolithique à l'Antiquité tardive. Recherches récentes. Actes du colloque de Damas 2007* (*BAH* 191), Damas.

Bader (N.)
2009 *Inscriptions grecques et latines de la Syrie,* XXI : *Inscriptions de la Jordanie,* V : *La Jordanie du Nord-Est*, fasc. I (*BAH* 187), Beyrouth.

Bartoccini (R.)
1941 « Un decennio di ricerche e di scavi italiani in Transgiordania », *Bollettino del Reale Istituto di Archeologia e Storia dell'Arte* 9, p. 1-10.

Bessac (J.-C.)
2010 « Le basalte de Syrie du Sud: quelques repères techniques, économiques et chronologique », Al-Maqdissi, Braemer & Dentzer 2010, p. 413-423.

Bianchi (B.)
2007 *Arabia e Palestina dall'Impero al Califfato*, Florence.

Bopp (E.-M.)
2006 *Die antike Wohnkultur des Hauran in Syrien*, Rahden.

Brogiolo (G.-P.)
1988 *Archeologia dell'edilizia storica*, Côme.

Brown (R.-M.)
2009 « The Druze Experience at Umm al-Jimal: Remarks on the History and Archaeology of the Early 20th Century Settlement », *Studies on the History and Archaeology of Jordan* 10, p. 377-388.

Bucarelli (O.)
2007 « Umm es-Surab (Giordania). Indagini archeologiche topografiche nel settore ovest », *Temporis Signa* II, p. 309-330.

Buckingham (J.-S.)
1821 *Travels in Palestine Through the Countries of Bashan and Gilead, East of the River Jordan, Including a Visit to the Cities of Geraza and Gamala in the Decapolis*, Londres.

Buckingham (J.-S.)
1825 *Travels among the Arab Tribes Inhabiting the Countries East of Syria and Palestine*, Londres.

Butler (H. C.)
1919 *Syria. Publications of the Princeton University Archaeological Expedition to Syria in 1904-1905 and 1909, Division* II*: Ancient Architecture in Syria. Section* A. *Southern Syria. Part* 2, The Southern Hauran, Leyde.

Clauss-Balty (P.)
2008 *Hauran* III. *L'Habitat dans les campagnes de Syrie du Sud aux époques classique et médiévale* (*BAH* 181), Beyrouth.

De Vries (B.)
1998 *Umm el-Jimal. A Frontier Town and its Landscape in Northern Jordan*, Portsmouth.

Dentzer (J.-M.)
1985-1986 *Hauran* I. *Recherches archéologiques sur la Syrie du Sud à l'époque hellénistique et romaine*, première et deuxième parties, Paris.

Dussaud (R.) & Macler (F.)
1901 *Voyage archéologique au Safa et dans le Djebel ad-Drūz*, Paris.

Feissel (D.) & Gatier (P.-L.)
1998 « Syrie, Phénicie, Palestine, Arabie », *Bull. ép* 111, p. 671-685.

Gilento (P.)
2013 *Stratigrafia e Tipologie costruttive dello Hawran giordano. Verifica delle potenzialità di un "antico" strumento archeologico: la registrazione degli edifici*. PhD. Université de Sienne.

Gilento (P.)
2014e « La chiesa dei Santi Sergio e Bacco, Umm as-Surab (Giordania). Risultati storico-costruttivi dall'analisi archeologica degli elevati », *Arqueología de la Arquitectura* 11: file://localhost/e013.doi/ http/::dx.doi. org:10.3989:arq.arqt.2014.015 and http://arqarqt.revistas.csic.es/index.php/arqarqt/article/view/166

Gilento (P.), Parenti (R.) & Vecchi (A.)
2013 « An integrated System for the Study and Management of Historical Buildings », F. Contreras, M. Farjas & F.-J. Melero (éd.), *Proceedings of the 38th Annual Conference on Computer Applications and Quantitative Methods in Archaeology, CAA 2010* (*BAR IS* 2494), p. 23-29.

Graham (C.-C.)
1858 « Explorations in the Desert East of the Hauran and in the Ancient Land of Bashan », *JRGS* 28, p. 226-263.

Guérin (A.)
2008 « Le village de Mseikeh et le Léjà à la période islamique (VII^e^-XV^e^ siècle). Archéologie du peuplement et histoire du territoires », Clauss-Balty 2008, p. 233-298.

Helms (S.-W.)
1981 *Jawa. Lost City of the Black Desert*, Londres.

King (G. R. D.)
1983a « Byzantine and Islamic sites in northern and eastern Jordan », *Proceedings of the 16th Seminar for Arabian Studies* 13, p. 79-91.

King (G. R. D.)
1983b « Two Byzantine Churches in Northern Jordan and their Re-use in the Islamic Period », *DamMitt* 1, p. 111-136.

Kennedy (D.-L.)
2004 *The Roman Army in Jordan*, Londres.

Kennedy (D.-L.) & Freeman (P.)
1995 « Southern Hauran Survey 1992 », *Levant* 27, p. 39-73.

Léna (É.)
2008 « Le Dar Majarish à Muhajat, dispositifs spatiaux, systèmes constructifs : une étude de cas », Clauss-Balty 2008, p. 105-133.

Littmann (E.)
1910 *Publications of the Princeton University. Archaeological Expedition to Syria in 1904-1905 and 1909, Division* III*: Greek and Latin Inscriptions in Syria. Section* A. *Southern Syria. Part* 2. *Southern Hauran*, Leyde.

Mittmann (S.)
1966 « The Roman Road from Gerasa to Adraa », *ADAJ* 11, p. 65-87.

Parenti (R.)
1988 « Sulla possibilità di datazione e di classificazione delle murature », R. Francovich & R. Parenti (éd.), *Archeologia e restauro dei monumenti*, Florence, p. 280-305.

Parenti (R.) & Gilento (P.)
2011 « Orient and Occident: continuity and evolution in construction know-how from the 4th to the 9th centuries », *Archeologia dell'Architettura* XV, 2010, p. 181-195.

Parenti (R.) & Gilento (P.)
2012 « Limes Arabicus and still-standing buildings », G. Vannini, M. Nucciotti (éd.), *La Transgiordania nei secoli XII-XIII e le 'frontiere' del Mediterraneo medievale* (*BAR S*2386), p. 111-124.

Parenti (R.), Gilento (P.) & Ceccaroni (F.)
2011 « Three dimensional data and the recording of material structure », *Proceedings of 3DARCH-2011. International Archives of Photogrammetry, Remote Sensing and Spatial Information Sciences* 38-5/W16, p. 405-412.

Sartre-Fauriat (A.)
2004 *Les voyages dans le Ḥawrān (Syrie du Sud) de William John Bankes (1816 et 1818)*, *Mémoires* 11, *BAH* 169, Bordeaux/Beyrouth.

Schumacher (G.)
1893-1895 « Ergebnisse meiner Reise durch Hauran, Adschlun und Belka », *ZDPV* 16, p. 72-83 and 153-170.

Seetzen (U. J.)
1854 *Reisen durch Syrien, Palästina, Phönicien, die Transjordan-länder, Arabia Petraea und Unter-Aegypten*, Berlin.

Villeneuve (Fr.)
1985 « L'économie rurale et la vie des campagnes dans le Hauran antique (I^er^ s. av. J.-C. – VII^e^ s. ap. J.-C.). Une approche », Dentzer 1985-1986, p. 63-136.